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ANATOMICAL EXAMINATIONS.

A COMPLETE SERIES

OF

ANATOMICAL QUESTIONS,

WITH

ANSWERS.

THE ANSWERS ARRANGED SO AS TO FORM

AN ELEMENTARY SYSTEM OF ANATOMY,

AND INTENDED AS

PREPARATORY TO EXAMINATIONS AT

SURGEON'S HALL.

TO WHICH ARE ANNEXED

TABLES OF THE BONES, MUSCLES, AND ARTERIES.

VOLUME I.

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PREFACE.

ANATOMY must be learned in the Dissecting Room; it is only there, aided by competent Teachers, that the Student can acquire such information in this branch of his studies as will be practically useful to him. But, in this pursuit, the memory may receive great and important assistance from a short and clear account of the various parts of the Body, to which the Learner may refer when his Teacher is absent, or when alone he meditates on the subject of his labours. His memory may be further most usefully exercised by questions well adapted to the subject; they will lead him to form a just estimate of his acquirements and deficiencies, and this practice will give him a familiarity with examinations, the want of which often embarrasses those, who present themselves before the College of Surgeons.

With a view to afford the Anatomical Student this species of assistance, the following work has been composed.

The FIRST PART contains a complete and systematic Series of Examinations, whose numerical arrangement will render it easy to refer to the respective Answers in the Second Part.

The SECOND PART is an Elementary System of Anatomy, which may be read and consulted without any regard to the numerical references to the First.

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ANATOMICAL EXAMINATIONS.

PART FIRST.

CONTAINING

THE QUESTIONS.

SECTION I.

OF ANATOMY IN GENERAL.

Question

1 DEFINE the Science of Anatomy.
2 What is Morbid Anatomy?
3 Define the Science of Physiology.
4 What is the general Division of the component Parts of the Human Body?
5 Enumerate the Solids of the Body.
6 What are Bones?
7 What are Cartilages?
8 What are Ligaments?
9 What are Muscles?
10 What is the Cellular Membrane?
11 What are Membranes?
12 What are Vessels?
13 What are Nerves?
14 What are Glands?
15 What are Viscera?
16 What is the Adipose Substance?
17 Enumerate the Fluids of the Human Body.
18 What is Blood?
19 What is Urine?
20 What is Perspirable Matter?
21 What is Ceruminous Matter?
22 What is Sebaceous Matter?
22 *What is Animal Oil?

Quest.

23 What is SALIVA?

24 What are TEARS?

25 What is MUCUS?

26 What is BILE?

27 What is the GASTRIC JUICE?

28 What is the SEMEN?

29 What is the SYNOVIA?

30 What is the PANCREATIC JUICE?

31 By what is MILK secreted?

31 *What is CHYLE?

32 What DIVISIONS does the Science of Anatomy derive from the individual Subjects which it considers?

33 Of what does OSTEOLOGY treat?

34 Of what does OSTEOGENY treat?

35 Of what does SYNDESMOLOGY treat?

36 Of what does CHONDROLOGY treat?

37 Of what does MYOLOGY treat?

38 Of what does ADENOLOGY treat?

39 Of what does SPLANCHNOLOGY treat?

40 Of what does BURSALOGY treat?

41 Of what does ANGIOLOGY treat?

42 Of what does NEUROLOGY treat?

SECTION II.

OF THE BONES IN GENERAL.

1 What is the PERIOSTEUM?

2 What is the PERICHONDRIUM?

3 What are the USES OF THE PERIOSTEUM?

4 What is the PERIOSTEUM INTERNUM?

5 What is the USE OF THE PERIOSTEUM INTERNUM?

6 What are the general CLASSES of Bones?

7 What are the EPIPHYSES of Bones?

8 What is the GENERAL STRUCTURE OF EPIPHYSES?

9 What are the DIAPHYSES of Bones?

10 What is the GENERAL STRUCTURE of DIAPHYSES INTERNALLY?

11 What is the GENERAL STRUCTURE OF DIAPHYSES EXTERNALLY?

12 What are the APOPHYSES of Bones?

13 How do the APOPHYSES differ from the EPIPHYSES?

Quest.

14 What is the INTIMATE STRUCTURE OF ALL BONES?
15 Are not Bones formed in *Fibres and Plates, or Lamellæ?*
16 Are Bones *Vascular?*
17 Where do their Vessels enter?
18 What is the best Demonstration of the Vascularity of Bones?
19 What is the MEDULLA of Bones?
20 How is it secreted?
21 Where do the Medullary Arteries of Bones penetrate them?
22 What is the USE OF THE MEDULLA?
23 What NAMES are given to the different Parts of Bones?
24 What are FORAMINA?
25 What are CANALS?
26 What are SINUSES?
27 What are SINUOSITIES?
28 What are FURROWS in Bones?
29 What are NOTCHES?
30 What are FOSSÆ?
31 What are PITS?
32 What are GLENOID CAVITIES?
33 What are COTYLOID CAVITIES?
34 What are the TUBERCLES of Bones?
35 What are TUBEROSITIES?
36 What are SPINES?
37 What are HEADS?
38 What are NECKS?
39 What are PROCESSES?

SECTION III.

OF ARTICULATION IN GENERAL.

1 What is the ARTICULATION of Bones?
2 What are the GENERAL CLASSES OF ARTICULATION?
3 What is SYMPHYSIS?
4 What is SYNARTHROSIS?
5 What is DIARTHROSIS?
6 What are the GENERA, or SUBDIVISIONS OF SYMPHYSIS?

Quest.

7 What are the GENERA OF SYNARTHROSIS?
8 What are the GENERA OF DIARTHROSIS?
9 What is SYNOSTOSIS?
10 What is SYNDESMOSIS?
11 What is SYNCHONDROSIS?
12 What is SYSSARCOSIS?
13 What is SYNEUROSIS?
14 What is SUTURE?
15 What is HARMONIA?
16 What is SCHINDYLESIS?
17 What is GOMPHOSIS?
18 What is ENARTHROSIS?
19 What is ARTHRODIA?
20 What is AMPHIARTHROSIS?
21 What is GINGLYMUS?
22 What are the DIFFERENT SPECIES OF GINGLYMUS?
23 What is the GINGLYMUS SIMPLEX?
24 What is the GINGLYMUS COMPOSITUS?
25 What is the GINGLYMUS TROCHOIDES?

SECTION IV.

OF OSTEOGENY.

1 What is the Name of that Division of Anatomy which treats of the growth of Bones?
2 How are Bones formed?
3 What are the CONSTITUENT PARTS of Bones?
4 What are the PHENOMENA OF OSSIFICATION?
5 How does Ossification take place in the DIAPHYSES of long Bones?
6 How does Ossification take place in the EPIPHYSES of long Bones?
7 How does Ossification take place in the BONES OF THE CRANIUM?
8 What Bones are perfectly formed at Birth?
9 What Bones are latest of being ossified?
10 When does *Ossification in the Epiphyses terminate?*
11 At what Period are the *Epiphyses united to the Diaphyses?*

SECTION V.

OF THE HEAD AND ITS SUTURES.

Quest.

1 How are the Bones of the Head DIVIDED?

2 What is the GENERAL STRUCTURE of the Bones of the Cranium?

3 Which of its TABLES is the thickest?

4 What is the DIPLOE of the Cranium?

5 What is the Name of the Membrane covering the Cranium?

6 What is the STRUCTURE of the Bones of the Face?

7 Enumerate the Bones of the Cranium.

8 What Bones are proper to the Cranium?

9 What Bones are common to the Cranium and Face?

10 What Bones are proper to the Face?

11 What is the SITUATION of the Os FRONTIS?

12 What is the Situation of the OSSA PARIETALIA?

13 What is the Situation of the OSSA TEMPORUM?

14 What is the Situation of the Os OCCIPITIS?

15 What is the Situation of the Os SPHÆNOIDES?

16 What is the Situation of the Os ETHMOIDES?

17 What is the Situation of the OSSA NASI?

18 What is the Situation of the OSSA LACHRYMALIA?

19 What is the Situation of the OSSA MALARUM?

20 What is the Situation of the OSSA MAXILLARIA SUPERIORA?

21 What is the Situation of the OSSA PALATI?

22 What is the Situation of the OSSA TURBINATA INFERIORA?

23 What is the Situation of the VOMER?

24 What are the SUTURES of the Cranium?

25 What SUTURES connect the Bones of the Cranium and Face?

26 What are the HARMONIÆ of the Face?

27 Describe the CORONAL SUTURE.

28 Describe the SAGITTAL SUTURE.

29 Describe the LAMBDOIDAL SUTURE.

30 Describe the SQUAMOUS SUTURES.

31 What are the ADDITAMENTA SUTURÆ LAMBOIDALIS?

32 What are the ADDITAMENTA SUTURÆ SQUAMOSÆ?

Quest.

33 Describe the SPHÆNOIDAL SUTURE.
34 Describe the ETHMOIDAL SUTURE.
35 Describe the TRANSVERSE SUTURE.
36 Describe the ZYGOMATIC SUTURE.
37 Describe the PERPENDICULAR NASAL HARMONIA.
38 Describe the LATERAL NASAL HARMONIÆ.
39 Describe the LACHRYMAL HARMONIÆ.
40 Describe the TRANSVERSE NASAL HARMONIÆ.
41 Describe the EXTERNAL ORBITAL HARMONIÆ.
42 Describe the INTERNAL ORBITAL HARMONIÆ.
43 Describe the MYSTACHIAL HARMONIA.
44 Describe the TRANSVERSE PALATINE HARMONIA.
45 Describe the LONGITUDINAL PALATINE HARMONIA.
46 Describe the MAXILLO-PALATINE HARMONIÆ.
47 What Bones of the Face does SCHYNDYLESIS connect?
48 What Bones of the Face does GOMPHOSIS connect?

SECTION VI.

OF THE BONES OF THE HEAD.

OS FRONTIS.

1 What is the SITUATION of the Os Frontis?
2 How is the Os Frontis DIVIDED?
3 What is the SITUATION and GENERAL FORM of its FRONTAL PORTION?
4 What is the SITUATION and GENERAL FORM of its FACIAL PORTION?
5 What are the ELEVATIONS of the Os Frontis?
6 What Muscles are attached to its *Internal Angular Processes?*
7 What are attached to its *Temporal Ridges?*
8 What is attached to its *Spine?*
9 What are situated above its *Orbital Plates?*
10 What are the DEPRESSIONS of the Os Frontis?
11 What are situated in its *Lachrymal Depressions?*
12 What is situated in its *Ethmoidal Fissure?*
13 What are situated in its *Temporal Depressions?*
14 What is situated in the Furrow of its *Spine?*
15 What are the FORAMINA of the Os Frontis?
16 What is transmitted through its *Superciliary Foramen?*

Quest.

17 What is transmitted occasionally through the *Foramen* called *Cæcum?*
18 What is fixed in the *Foramen Cæcum?*
19 What is the FŒTAL STATE of this Bone?
20 What are the CONNEXIONS of this Bone?
21 What are the USES of this Bone?

OS PARIETALE.

22 What is the SITUATION of the Os Parietale?
23 What is its GENERAL FORM?
24 What are the Names of its SIDES?
25 What are the Names of its ANGLES?
26 What are the ELEVATIONS of the Os Parietale?
27 What is attached to its *Temporal Ridge?*
28 How do you distinguish the Bone of one Side from that of the other?
29 What are the DEPRESSIONS of the Os Parietale?
30 What is situated in the *Furrow* on the Inside of its upper Edge?
31 What is situated in the *Furrow* on the Inside of its inferior posterior Angle?
32 What is situated in the *Furrow* on the Inside of its anterior inferior Angle?
33 What is contained in the *Pits*, frequently seen on its internal Surface?
34 What are the FORAMINA of the Os Parietale?
35 What does its FORAMEN transmit?
36 What is the FŒTAL STATE of this Bone?
37 What are the CONNEXIONS of this Bone?
38 What are the USES of this Bone?

OS TEMPORIS.

39 What is the SITUATION of the Os Temporis?
40 How is the Os Temporis DIVIDED?
41 What is the SITUATION and GENERAL FORM of its SQUAMOUS PORTION?
42 What is the SITUATION and GENERAL FORM of its MAMILLARY PORTION?
43 What is the SITUATION and GENERAL FORM of its PETROUS PORTION?
44 What are the ELEVATIONS of the Os TEMPORIS?

Quest.

45 What is the internal Structure of its *Mamillary Process?*

46 What Muscles are attached to that *Process?*

47 What is attached to the upper edge of the *Zygomatic Process?*

48 What is attached to the lower Edge of that *Process?*

49 What passes under that *Process?*

50 What is the Use of the *Tubercle* situated at its base?

51 What is attached to the *Styloid Process?*

52 What is attached to the *Auditory Process?*

53 What is attached to the Edge of its *Petrous Portion?*

54 What are the DEPRESSIONS of the Os Temporis?

55 What is situated in the *Articular Cavity* of the Bone?

56 What passes through the *Fissura Glasseri?*

57 To what does the Groove behind the *Mastoid Process* give Attachment?

58 What does the *Jugular Foramen* transmit?

59 What is lodged in its *Temporal Depression?*

60 What is situated in the *Furrow* on the inside of its Mamillary Portion?

61 What is situated in the *Furrows* at the upper and lower Edges of the Posterior Surface of its Petrous Portion?

62 What are the FORAMINA of the Os Temporis?

63 What passes through the *Stylo-Mastoid Foramen?*

64 What does the *Canalis Carotideus* transmit?

65 What does the *Foramen Mastoideum* transmit?

66 What does the *Meatus Auditorius Internus* transmit?

67 What is transmitted by the *Fallopian Aqueduct?*

68 What does the small *Foramen* on the superior Surface of the Petrous Portion transmit?

69 What is the FŒTAL STATE of this Bone?

70 What are the CONNEXIONS of this Bone?

71 What are the USES of this Bone?

OS OCCIPITS.

72 What is the SITUATION of the Os Occipitis?

73 What is its GENERAL FORM?

74 What are the ELEVATIONS of the Os Occipitis?

75 With what are its *Condyles* connected?

Quest.

76 What Muscles are fixed to the *Protuberances* external to the Condyles?

77 What is fixed to the *Anterior Edge* of the great Foramen?

78 What is fixed to its *Posterior Edge?*

79 What is fixed to its *Superior Transverse Ridge* and *Spine?*

80 What is fixed to its *Inferior Transverse Ridge?*

81 What is fixed to the *Upper Portion* of its internal Crucial Ridge?

82 What is fixed to the *Lateral Portions* of its internal Crucial Ridge?

83 What is fixed to its *Inferior Portion?*

84 What are the DEPRESSIONS of the Os Occipitis?

85 What is fixed to the *Hollow* between the two external Transverse Ridges?

86 What is fixed to the *Depression* below its inferior external Transverse Ridge?

87 What do the *Semilunar Depressions* external to the Condyles contribute to form?

88 What is fixed to the small *Depressions* before the Condyles?

89 What are fixed to the small *Depressions* anterior to the last?

90 What is situated in the *Furrow* of the Upper Portion of its internal Crucial Ridge?

91 What are situated in the *Furrows* of the Lateral Portions of its internal Crucial Ridge?

92 What is situated in the *Furrow* of the Inferior Portion of its internal Crucial Ridge?

93 What are situated in the great *Depressions* above the Lateral Portions of its internal Crucial Ridge?

94 What are situated in the great *Depressions* below the Lateral Portions of its internal Crucial Ridge?

95 What are situated in the *Furrows* immediately before these inferior Depressions?

96 What is situated in the great *Depression* of the Superior Surface of the Cuneiform Process?

97 What are situated in the small *Furrows* on each side of that great Depression?

98 What are the FORAMINA of the Os Occipitis?

99 What does the *Foramen Magnum* transmit?

Quest.

100 What does the *Foramen Condyloideum Posterius* transmit?

101 What does the *Foramen Condyloideum Anterius* transmit?

102 What is the FŒTAL STATE of this Bone?

103 What are the CONNEXIONS of this Bone?

104 What the USES of this Bone?

OS SPHŒNOIDES.

105 What is the SITUATION of the Os Sphœnoides?

106 What are its GENERAL DIVISIONS?

107 What are the ELEVATIONS of the Os Sphœnoides?

108 What is attached to its *Processus Azygos?*

109 What is attached to the internal side of its *External Pterygoid Plate?*

110 What passes over the *Hook-like Process* of its internal Pterygoid Plate?

111 What are the DEPRESSIONS of the Os Sphœnoides?

112 What are the *Depressions* on each Side of the Processus Azygos?

113 What is situated in the *Sella Turcica?*

114 What are situated in the *Furrows* at its Sides?

115 What is situated in its *Temporal Depression?*

116 What passes in the *Furrow* on the anterior Edge of its Temporal Depression?

117 What is placed in the *Depression* between the Temporal and the Pterygoid Processes of the Bone?

118 What rests upon the *Internal Cavity* of each *Ala?*

119 What passes in the *Furrow* internal to the Base of the Pterygoid Portion of the Bone?

120 What is situated in the *Cavity* behind the Base of the Internal Pterygoid Process.

121 What is situated in the *Fossa Pterygoidea?*

122 What are the FORAMINA of the Os Sphœnoides?

123 What are the USES of the *Sphœnoidal Sinuses?*

124 What do the *Foramina Optica* transmit?

125 What do the *Foramina Lacera* transmit?

126 What do the *Foramina Rotunda* transmit?

127 What do the *Foramina Ovalia* transmit?

128 What do the *Foramina Spinosa* transmit?

129 What do the *Foramina Vidia* transmit?

Quest.

130 What is the Fœtal State of this Bone?
131 What are its Connexions?
132 What are its Uses?

OS ETHMOIDES.

133 What is the Situation of the Os Ethmoides?
134 What is the general Form of that Bone?
135 Of what Portions does it consist?
136 What is the *Situation* of each of these Portions?
137 What is the Name of the *Process* which rises from the Cribriform Lamella? and to what does it give attachment?
138 What are the *Foramina* of the Cribriform Lamella? and what do they transmit?
139 What are the *Foramina* of the Ossa Turbinata Superiora? and what do they transmit?
140 What are the *Foramina* of the Ossa Plana? and what do they transmit?
141 What are the Connexions of the Os Ethmoides?
142 What is the Fœtal State of that Bone?
143 What are its Uses?

OS NASI.

144 What is the Situation of the Os Nasi?
145 What is the Form of this Bone?
146 What are its Connexions?
147 What is its Fœtal State?
148 What is its Use?

OS LACHRYMALE.

149 What is the Situation of the Os Lachrymale?
150 What is the Form of this Bone?
151 What is situated in its *Groove?*
152 What rests upon its *Flat Surface?*
153 What *Cavities* do its inner Surfaces cover?
154 What are its Connexions?
155 What is its Fœtal State?
156 What is its Use?

OS MALÆ.

157 What is the Situation of the Os Malæ?
158 What is the general Form of this Bone?
159 What are the Elevations of the Os Malæ?
160 What Muscles arise from the outside of the *Zygomatic Process?*
161 What is attached to the *Edge* of the Bone between the Zygomatic and Superior Orbital Process?
162 What are its Depressions?
163 What are lodged in these *Depressions?*.
164 What are its Foramina?
165 What does the *Foramen* transmit?
166 What is the Fœtal State of this Bone?
167 What are its Connexions?
168 What are its Uses?

OS MAXILLARE SUPERIUS.

169 What is the situation of the Os Maxillare Superius?
170 What is the general *form* of this Bone?
171 What are the *Elevations* of the Os Maxillare Superius?
172 What are contained in the *holes* of the *Alveolar Processes?*
173 What is the *use* of the *Palatine Process?*
174 What is fixed to the *Spinous Process?*
175 What rests in the groove on the outer side of the *Nasal Process?*
176 To what muscle does the posterior part of the *Bulbous Process* give origin?
177 From what part of the *Orbitar Process* does the *Obliquus Inferior Oculi* arise?
178 What are the *Depressions* of the Os Maxillare Superius?
179 What Muscle is attached to the *small Depression* on the anterior part of the Alveolar Process?
180 What muscle is attached to the *Depression* between the Alveolar and Malar Processes?
181 What is situated in the *Temporal Depression?*
182 What are the *Foramina* of the Os Maxillare Superius?

Quest.

183 What does the *Infra-Orbitary Foramen* transmit?
184 What does the *Foramen Incisivum* transmit?
185 What does the *Sphæno-Maxillary Fissure* transmit?
186 What does the *Palatine Foramen* transmit?
187 What is the *Fœtal State* of this Bone?
188 What are its *connexions?*
189 What are its *uses?*

OS PALATI.

190 What is the *situation* of the Os Palati?
191 What are its *general Divisions?*
192 What is the situation of its *Palatine Process?*
193 What is the situation of its *Nasal Lamella?*
194 What is the situation of its *Pterygoid Process?*
195 What is the situation of its *Orbitar Processes?*
196 What are the *Elevations* of the Os Palati?
197 What is attached to the *upper edge of the Spinous Process* of the Os Palati?
198 What is attached to the *posterior end of the Spinous Process?*
199 What is attached to the *Posterior Semicircular Edge* of the Palatine Portion?
200 What is attached to the *Transverse Ridge* on the inside of the Nasal Lamella?
201 What are the *Depressions* of the Os Palati?
202 What are the *Foramina* of the Os Palati?
203 What is the *Fœtal State* of the Os Palati?
204 What are the *connexions* of the Os Palati?
205 What are the *uses* of the Os Palati?

OSSA TURBINATA INFERIORA.

206 What is the *situation* of the Inferior Turbinated Bone?
207 What is the *form* of the Inferior Turbinated Bone?
208 What is its *Fœtal State?*
209 What are its *connexions?*
210 What are its *uses?*

VOMER.

Quest.

211 What is the *situation* of the Vomer?
212 What is the *form* of the Vomer?
213 What is its *Fœtal State?*
214 What are its *connexions?*
215 What are its *uses?*

OS MAXILLARE INFERIUS.

216 What is the *situation* of the Maxilla Inferior?
217 What are its *general Divisions?*
218 What are the *Elevations* of the Maxilla Inferior?
219 What is attached to its *Coronoid Processes?*
220 What is attached to the *outer sides of its angles?*
221 What is attached to the *inner sides of its angles?*
222 What is attached to *the line* which passes internally from the base of the Coronoid Process to the commencement of the Chin?
223 What is attached to *the line* which passes externally from the base of the Coronoid Process to the commencement of the Chin?
224 What is attached to the *Protuberance* immediately behind the Symphysis of the Jaw?
225 What is attached to the *Projections* on the anterior part of the base of the Chin?
226 What are the *Depressions* of the Maxilla Inferior?
227 What is fixed to the *Depression* before the Condyloid Process of the Jaw?
228 What is attached to the *Depressions upon the anterior* surface of the Chin?
229 What is attached to the *Depressions on the base* of the Chin?
230 What are the *Foramina* of the Maxilla Inferior?
231 What do the *Foramina* of the lower Jaw *transmit?*
232 What passes through the *small Canal* which descends on the inner side of the Posterior Foramen?
233 What is the *Fœtal State* of the Maxilla Inferior?
234 What are its *connexions?*
235 What are its *uses?*

THE TEETH.

Quest.

236 What is the *number* of the Teeth in the Adult?
237 What is the *situation* of the Teeth?
238 Of what *substances* are the Teeth composed?
239 Upon what part of the Teeth is the *Enamel* thickest?
240 How are the *Fibres of the Enamel* arranged?
241 How are the *Fibres of the Bony* part of the Teeth arranged?
242 Into what portions is each Tooth divided?
243 Where are the *Canals* of the Teeth situated?
244 What passes through the Canals of the Teeth?
245 Into what *classes* are the Teeth divided?
246 What is the *number* of the *Incisores?*
247 What is the *form* of the *Incisores?*
248 Which of the *upper Incisores* are largest?
249 Which of the *lower Incisores* are largest?
250 What is the *situation* of the *Canini?*
251 What is the *number* of the *Canini?*
252 What is the *form* of the *Canini?*
253 What is the *situation* of the *Molares?*
254 What is the *number* of the *Molares?*
255 Which of the *Molares* have been termed *Bicuspides?*
256 What is the *form* of the *Bicuspides?*
257 Which of the Molares have been termed *Dentes Sapientiæ?*
258 What is the *form* of the *Dentes Sapientiæ?*
259 What is the *form* of the *third* and *fourth Molares?*
260 How do the Teeth begin to be formed?
261 When are the *Pulps of the Teeth first discernible?*
262 What is the *appearance of the Pulps* of the Teeth?
263 How are the *Pulps* of the Teeth *invested?*
264 Into what *layers* are the Membranes of the Pulps of the Teeth divisible?
265 What is *situated* between the *Capsule* and the *Pulp* of the Teeth?
266 When does *Ossification* commence on the Pulps of the Teeth?
267 In what manner does *Ossification* commence on the Pulps of the Teeth?

Quest.

268 To what part of the Teeth are their *Capsules* connected?
269 What is *secreted* by the *Capsules* of the Teeth?
270 How *many Teeth* compose the *first set?*
271 Of what *kinds* does the *first set* of Teeth consist?
272 About what time do the Teeth begin to *appear through the Gums?*
273 When do the Teeth *begin* to be *shed?*
274 When are the Teeth *completely shed?*
275 What is the immediate *cause* of the shedding of the Teeth?
276 What are the *connexions* of the Teeth?
277 What are the *uses* of the Teeth?

OS HYOIDES.

278 What is the *situation* of the Os Hyoides?
279 Into what parts is the Os Hyoides *divided?*
280 What is the *form of the body* of the Os Hyoides?
281 What *Muscles*, *Ligaments*, and *Membranes*, are attached to *the body* of the Os Hyoides?
282 What is the *situation of the Cornua* of the Os Hyoides?
283 What is the *form of the Cornua* of the Os Hyoides?
284 What *Muscles*, *Ligaments*, and *Membranes*, are attached to the *Cornua* of the Os Hyoides?
285 What is the *situation* of the *Appendices* of the Os Hyoides?
286 What is fixed to the *Appendices* of the Os Hyoides?
287 What is the *Fœtal State* of the Os Hyoides?
288 What are the *connexions* of the Os Hyoides?
289 What are the *uses* of the Os Hyoides?

SECTION VII.

OF THE BONES OF THE TRUNK.

1 Into what *parts* are the *Bones of the Trunk* divided?

BONES OF THE SPINE.

VERTEBRÆ.

Quest.

2 What is the *situation* of the Spine?
3 What is the *general form* of the Spine?
4 What is the *general Division* of the Spine?
5 How many are the *true Vertebræ* in number?
6 Into what *classes* are the true Vertebræ divided?
7 Of what parts do *the Vertebræ* in general consist?
8 What is the *situation* and *form* of the *bodies* of the Vertebræ?
9 How many *processes* do the Vertebræ in general possess?
10 What are the names of the Vertebral processes?
11 Where is the ring of the Vertebræ situated?
12 What do the *rings of the Vertebræ* when connected form?
13 Where are the *Oblique* or *Articular Processes* of the Vertebræ situated?
14 Where are the *Transverse Processes* of the Vertebræ situated?
15 Where are the *Spinous Processes* of the Vertebræ situated?
16 Where are the *Notches* of the Vertebræ situated?
17 What is the *use* of the *Notches* of the Vertebræ?
18 What is the *internal structure* of the Vertebræ?
19 How are the Vertebræ *connected?*

CERVICAL VERTEBRÆ.

20 What is the peculiar *form* of the bodies of the *Cervical Vertebræ* in general?
21 How do the *Spinous Processes* of the Cervical Vertebræ in general differ from the rest?
22 How do the *Transverse Processes* of the Cervical Vertebræ in general differ from the rest?
23 How do the *Oblique Processes* of the Cervical Vertebræ in general differ from the rest?

ATLAS.

Quest.

24 What is the name of the *first Vertebra?*

25 What parts common to the other Vertebræ are wanting in the Atlas?

26 How does the *ring* of the Atlas differ from those of the rest?

27 What is the name of the *anterior* and *posterior* parts of the Atlas?

28 To what *part of the Atlas* is the tooth-like Process of the second Vertebræ fixed?

29 How do the *Transverse Processes* of the Atlas differ from those of the rest?

30 How do the *Superior Articular Processes* of the Atlas differ from those of the rest?

31 How do the *Inferior Articular Processes* of the Atlas differ from those of the rest?

32 What is seen immediately *behind* the *Superior Articular Processes* of the Atlas?

33 To what part of the Atlas is the *Transverse Ligament* of the tooth-like Process fixed?

34 To what part of the Atlas are the *lateral Ligaments* of the tooth-like Process partly fixed?

DENTATA.

35 What is the name of the *second Cervical Vertebra?*

36 How does the *body of the Dentata* differ from those of the rest?

37 Where is the *tooth-like Process* marked by the situation of its Transverse Ligament?

38 From what part of the tooth-like Process does the *perpendicular Ligament* rise?

39 From what part of the tooth-like Process do the *lateral Ligaments* rise?

40 How does the *Spinous Process* of the Vertebra Dentata differ from those of the rest?

41 How do the *Transverse Processes* of the Vertebra Dentata differ from those of the rest?

42 How do the *Superior Articular Processes* of the Vertebra Dentata differ from those of the rest?

LAST CERVICAL VERTEBRA.

Quest.

43 How does the *body* of the last Cervical Vertebra differ from those of the rest?

44 How does the *Spinous Process* of the last Cervical Vertebra differ from those of the rest?

45 How do the *Transverse Processes* of the last Cervical Vertebra differ from those of the rest?

DORSAL VERTEBRÆ.

46 What is peculiar to the *Bodies* of the Dorsal Vertebræ in general?

47 How do the *Spinous Processes* of the Dorsal Vertebræ differ from those of the rest?

48 How do the *Articular Processes* of the Dorsal Vertebræ differ from those of the rest?

49 How do the *Transverse Processes* of the Dorsal Vertebræ differ from those of the rest?

50 How do the great *Foramina* of the Dorsal Vertebræ differ from those of the rest?

51 How are the *four first* Dorsal Vertebræ distinguished from the rest of the same class?

52 How are the *two last* Dorsal Vertebræ distinguished from the rest of the same class?

LUMBAR VERTEBRÆ.

53 How are the *Bodies* of the *Lumbar Vertebræ* distinguished from those of the rest?

54 How are the *Spinous Processes* of the Lumbar Vertebræ distinguished from those of the rest?

55 How are the *Transverse Processes* of the Lumbar Vertebræ distinguished from those of the rest?

56 How are the *Articular Processes* of the Lumbar Vertebræ distinguished from those of the rest?

57 What is the *shape* of the *great Foramina* of the Lumbar Vertebræ?

OS SACRUM.

58 What is the *situation* of the Os Sacrum?

59 What is the *form* of the Os Sacrum?

Quest.

60 Of how *many portions* does the Os Sacrum consist in the Fœtus?

61 Where is the *Canal* of the Os Sacrum situated?

62 What is the *form* of the Canal of the Os Sacrum?

63 How *many Foramina* open from the Canal of the Os Sacrum *anteriorly?*

64 How *many Foramina* open from the Canal of the Os Sacrum *posteriorly?*

65 What do the *Anterior Foramina* of the Os Sacrum transmit?

66 How many *Articular Processes* has the Os Sacrum?

67 What is the *form* of the *lateral parts* of the Os Sacrum?

68 What *Articular Surfaces* are seen on the lateral parts of the Os Sacrum?

69 What are the *connexions* of the Os Sacrum?

OS COCCYGIS.

70 What is the *situation* of the Os Coccygis?

71 What is the *form* of the Os Coccygis?

72 Of how *many portions* does the Os Coccygis consist?

73 Where are the *Shoulders* of the Os Coccygis situated?

BONES OF THE THORAX.

74 By what Bones is the Thorax formed?

RIBS.

75 What is the *situation* of the Ribs?

76 What is the *general form* of the Ribs?

77 What is the *number* of the Ribs?

78 Into what *classes* are the Ribs generally divided?

79 What is the *number* of *each class?*

80 Into what *parts* is each Rib divided?

81 What is the situation of *the Head* of the Rib?

82 Where is the *Neck* of the Rib?

83 Where is the *Tubercle* of the Rib situated?

84 Where is the *Angle* of the Rib situated?

85 Which is the *rounded Edge* of the Rib?

86 How is the *inferior Edge* of the Rib sharpened?

Quest.

87 What is situated in the *Groove* on the inner side of the inferior Edge of the Rib?

88 Why is the *Groove* of the inferior Edge of the Rib most strongly marked in the middle?

89 How is the *Head* of the Rib marked?

90 How is the *Tubercle* of the Rib marked?

91 To what is the *Tubercle* of the Rib connected?

92 At what distance is the Angle from the Tubercle of each Rib?

93 What is the *form* of the *anterior End* of the Ribs?

94 Which of the Ribs is the *longest?*

95 What is the *relative Elevation* of the ends of the ribs?

96 Whether is the anterior or posterior Parts of the Ribs *most crooked?*

97 Which of the Ribs is *most contorted?*

98 How do the *anterior Extremities* of the *false Ribs* differ from those of the true?

99 How does the *first Rib* differ from the rest?

100 How do the *eleventh* and *twelfth* Ribs differ from the rest?

101 Which of the Ribs has the *shortest Cartilages?*

102 Which of the Ribs has the *longest Cartilages?*

103 What is the *direction of the Cartilages* of the Ribs?

104 How many of the Ribs are *directly connected* to the Sternum?

105 How many of the Ribs are connected by their Cartilages *merely* to the *Cartilages of others?*

106 How many of the Ribs are *unconnected* by their Cartilages either to the Sternum or to other Cartilages?

STERNUM.

107 What is the *situation* of the Sternum?

108 What is the *form* of the Sternum?

109 Of what *portions* does the Sternum consist?

110 What is the *form* of the *upper portion* of the Sternum?

111 By what is the *superior Edge* of the upper portion of the Sternum hollowed?

112 By what are the *superior angles* of the Sternum depressed?

Quest.

113 How many *Depressions* are seen on the sides of the upper portion of the Sternum?

114 What is the *form* of the *second portion* of the Sternum?

115 What is attached to the *outside* of the *middle portion* of the Sternum?

116 What is attached to the *inside of the middle portion* of the Sternum?

117 How many *Depressions* are seen on the *sides* of the *middle portion* of the Sternum?

118 How are the *Depressions* of the Edges of the *middle portion* of the Sternum caused?

119 What is the *form* of the *third portion* of the Sternum?

120 What *Depressions* are on the *sides* of the *third portion* of the Sternum?

121 What is the *structure* of the Sternum?

BONES OF THE PELVIS.

122 What is the *situation* of the Pelvis?

123 What is the *form* of the Pelvis?

124 Of what *Bones* does the Pelvis *consist?*

125 How are the *Ossa Innominata* subdivided?

OS ILIUM.

126 What is the *situation* of the Os Ilium?

127 What is the *general form* of the Os Ilium?

128 Into what parts is the *Os Ilium* generally divided?

129 Where is the *Crista* of the Os Ilium situated?

130 What are the *Edges of the Crista* of the Ilium called?

131 What are the *anterior* and *posterior Extremities* of the Crista of the Ilium called?

132 What is attached to the *Anterior Superior Spinous Process* of the Os Ilium?

133 Where are the *Anterior Inferior* and *Posterior Inferior* Spinous Processes of the Os Ilium situated?

134 What *parts* of the Ilium are thickest?

135 To form what *Notch* does the Ilium *posteriorly* contribute?

Quest.

136 To form what *Cavity* does the *outside* of the base of the Ilium contribute?

137 How much does the *Ilium* contribute to the *Acetabulum?*

138 What *Muscles* are attached to the outer Labium of the Ilium?

139 What Muscles are attached to the line extending, on the Dorsum of the Ilium, from its Anterior Superior Spinous Process, to the Sciatic Notch?

140 What *Muscle* is attached to the semicircular ridge immediately above the Acetabulum?

141 What *Muscle* is situated in the hollow of the inner side of the Ilium?

142 What is the appearance of the posterior part of the inner side of the Ilium?

143 What part of the Ilium distinguishes the Cavity of the Pelvis from that of the Abdomen?

OS ISCHIUM.

144 What is the *situation* of the Os Ischium?

145 Into what parts is the Os Ischium *divided?*

146 Where is the *Spine* of the Ischium situated?

147 What is *attached to the Spine* of the Ischium?

148 Where is the *Tuberosity* of the Ischium situated?

149 What *Muscles arise* from the Tuberosity of the Ischium?

150 What is the *situation* of the Ramus of the Ischium?

151 What are the *Notches* of the Os Ischium?

OS PUBIS.

152 What is the *situation* of the Os Pubis?

153 Into what *parts* is the Os Pubis *divided?*

154 What is the *situation* of the *Body* of the Os Pubis?

155 How *much does* the Os Pubis *contribute* to the *Acetabulum?*

156 Where does the *Os Pubis* mark the *limits of the Pelvis?*

157 Where is *the Spine* of the Os Pubis situated?

158 What is *attached to the Spine* of the Os Pubis?

159 To what *Foramen* does the Os Pubis *contribute?*

Quest.

160 Where is the *Angle* of the Os Pubis situated?
161 Where is the *Ramus* of the Os Pubis situated?

ACETABULUM.

162 How is the *Acetabulum formed?*
163 What part of the *Edge* of the Acetabulum is most *prominent?*
164 What *portion* of the Acetabulum is *without Cartilage?*
165 What is *situated* in the portion of the Acetabulum which is uncovered by Cartilage?
166 Where is the *Notch* of the Acetabulum situated?
167 What is the *use* of the *Notch* of the Acetabulum?
168 What are the *connexions* of the *Os Innominatum?*

SECTION VIII.

OF THE BONES OF THE UPPER EXTREMITIES.

1 How are the *Bones* of the *Upper Extremities divided?*

BONES OF THE SHOULDER.

2 Of how *many Bones* does the *Shoulder* consist?

SCAPULA.

3 What is the *situation* of the Scapula?
4 What is the *general form* of the Scapula?
5 What *parts* of the *Scapula* are generally *enumerated?*
6 What is the *situation* of the *base* of the Scapula?
7 What is the *situation* of the *superior Costa* of the Scapula?
8 Where is the *Notch* of the Scapula situated?
9 What *passes through* the *Notch* of the Scapula?
10 What is the situation of the *inferior Costa* of the Scapula?
11 Which *edge* of the Scapula is *thickest?*
12 What is the *situation* of the *neck* of the Scapula?
13 How is the *neck* of the Scapula *terminated?*

Quest.

14 What *process proceeds from the neck* of the Scapula?

15 What is attached to the *Tuberosity* of the *Coracoid Process* of the Scapula?

16 What *Muscles arise* from the *tip* of the *Coracoid Process?*

17 What *Muscle arises* from above the *Glenoid Cavity* of the Scapula?

18 What is the *Appearance* of the *Dorsum* of the Scapula?

19 What *Process arises* from the *Dorsum* of the Scapula?

20 What *Muscle* is *attached* to the *superior* side of the Spina Scapulæ?

21 What *Muscle* arises from the *Inferior edge* of the Spina Scapulæ?

22 In what *process* does the *Spine* of the Scapula *terminate?*

23 What is the *form* of the *Acromion?*

24 What is *attached* to the *upper edge of the Acromion* near its Apex?

25 What *Muscle* arises from the *Inferior* and *Anterior* edges of the Acromion?

26 Into what *Cavities* does the *Spine divide* the Dorsum of the Scapula?

27 Whether is the Supra or Infra Spinal Fossa *largest?*

28 What is *situated* in the *Supra Spinal Fossa?*

29 What is *situated* in the *Infra Spinal Fossa?*

30 What *arises* from the *groove*, below the Infra Spinal Fossa, on the *inferior Costa* of the Scapula?

31 What *Muscle* arises from the *flat Surface* on the outside of the inferior angle of the Scapula?

32 What *Muscle passes over* the Inferior angle of the Scapula?

33 What is the *Appearance* of the *inner side* of the Scapula?

34 What *Muscle* is situated on the *inner side* of the Scapula?

35 What is the *general structure* of the Scapula?

36 What are the *connexions* of the Scapula?

CLAVICLE.

Quest.
37 What is the *situation* of the Clavicle?
38 What is the *general* form of the Clavicle?
39 Into what *parts* is the Clavicle *divided?*
40 What is the *form* of the *Sternal End* of the Clavicle?
41 What is attached to the *posterior angle* of the *Sternal End* of the Clavicle?
42 With what is the *Tubercle* at the *Posterior Part* near the *Humeral End* of the Clavicle connected?
43 What is the *form* of the *Scapular End* of the Clavicle?
44 What *Muscle* arises from the *Anterior Edge* of the Scapular end of the Clavicle?
45 What *Muscle* is *inserted* into the *posterior Edge* of the Scapular end of the Clavicle?
46 What *Muscle* arises from the *Anterior Edge* of the inner half of the Clavicle?
47 What *Muscle* is inserted into the *inferior Side* of the Clavicle?
48 What is the *structure* of the Clavicle?
49 What are the *connexions* of the Clavicle?

OS HUMERI.

50 What is the *situation* of the Os Humeri?
51 What is the *general form* of the Os Humeri?
52 Into what *parts* is the Os Humeri divided?
53 What is the *form* and *direction* of the *head* of the Os Humeri?
54 Where are the *Tuberosities* of the Os Humeri situated?
55 How are the *Tuberosities* of the Os Humeri distinguished?
56 What *Muscle* is inserted into the *internal Tuberosity* of the Os Humeri?
57 What *Muscles* are inserted into the *external Tuberosity* of the Os Humeri?
58 What is situated between the *Tuberosities* of the Os Humeri?
59 What passes through the *groove* between the Tuberosities of the Os Humeri?
60 What is called the *Neck* of the Os Humeri?

Quest.

61 What arises from the *posterior* part of the *Neck* of the Os Humeri?

62 What is *inserted* into the *ridge external*, to the groove of the Os Humeri?

63 What is *inserted* into the *ridge internal*, to the groove of the Os Humeri?

64 What is *inserted* into the great *Muscular Impression* on the outer side of the middle of the Os Humeri?

65 What is *inserted* into the *ridge* on the inner side of the middle of the Os Humeri?

66 At what *part* and in what *direction* does the *Medullary Artery* of this Bone enter?

67 What is the *form* of the *lower part* of the Os Humeri?

68 In what do the *edges* of the *lower part* of the Os Humeri terminate?

69 Which of the *Condyles* of the Os Humeri is the *largest?*

70 What *Muscles* generally arise from the *external Condyle* of the Os Humeri?

71 What *Muscles* generally arise from the *internal Condyles* of the Os Humeri?

72 Where is the *Trochlea* of the Os Humeri situated?

73 What is the *form* of the *Trochlea* of the Os Humeri?

74 What is the *form* of the Os Humeri immediately *above* the *Trochlea?*

75 To what are the *depressions* above the Trochlea of the Os Humeri *adapted?*

76 What is the particular *situation* of the Os Humeri?

77 What is the *structure* of the Os Humeri?

78 What are the *connexions* of the Os Humeri?

BONES OF THE FORE-ARM.

79 Of how many Bones does the *Fore-arm* consist?

ULNA.

80 What is the *situation* of the Ulna?

81 What is the *form* of the Ulna?

82 Into what *parts* is the Ulna generally *divided?*

83 What are the names of the *chief processes* of the Ulna?

Quest.

84 What is the situation of the *Olecranon?*

85 What *Muscles* are inserted into the *Olecranon?*

86 Where is the *Coronoid Process* of the Ulna situated?

87 What Muscle is inserted into the *Coronoid Process* of the Ulna?

88 Where is the *Olecranon* lodged when the fore-arm is extended?

89 Where is the *Coronoid process* lodged during the Flexion of the fore-arm?

90 What is the *use* of the *Triangular Surface* on the posterior part of the Olecranon?

91 What is lodged in the *Fossa* external to the Triangular Surface?

92 Where is the greater *Sigmoid Cavity* of the Ulna situated?

93 What is the *use* of the *greater Sigmoid Cavity* of the Ulna?

94 Where is the *lesser Sigmoid Cavity* of the Ulna situated?

95 What is the *use* of the *lesser Sigmoid Cavity* of the Ulna?

96 What is the *form* of the body of the Ulna?

97 What is *attached* to the outer sharp edge of the Ulna?

98 What is the situation of the *Canal* for the *Medullary Artery* of the Ulna?

99 What is the *form* of the *inferior extremity* of the Ulna?

100 What is attached to the *Styloid Process* of the Ulna?

101 What passes in the *groove* on the *Anterior side* of the termination of the Ulna?

102 What passes in the *groove* on the *posterior side* of the termination of the Ulna?

103 What is the *structure* of the Ulna?

104 What are the *connexions* of the Ulna?

RADIUS.

105 What is the *situation* of the Radius?

106 What is the general *form* of the Radius?

107 What are the *relative lengths* of the Radius and Ulna?

Quest.

108 Into what *parts* is the Radius *divided?*

109 What is the *form* of the *head* of the Radius?

110 With what is the *head* of the Radius *articulated* laterally?

111 What is the *situation* and *direction* of the *neck* of the Radius?

112 Where is the *Tuberosity* of the Radius situated?

113 What is *attached* to the *Tuberosity* of the Radius?

114 What is the *form* of the *body* of the Radius?

115 What is attached to the *inner sharp edge* of the Radius?

116 What is the *situation* and *direction* of the *Canal* of the *Medullary Artery* of the Radius?

117 What is the *relative size* of the *two ends* of the Radius?

118 What is the *form* of the *inferior* end of the Radius?

119 For what purpose is the *anterior side* of the *inferior end* of the Radius hollowed?

120 What is received into the *depression* of the *inner side* of the Radius?

121 What pass in the *grooves* on the *posterior side* of the Radius?

122 What is the *situation* of the *Styloid Process* of the Radius?

123 What is attached to the *Styloid Process* of the Radius?

124 What is the *structure* of the Radius?

125 What are the *connexions* of the Radius?

BONES OF THE HAND.

126 How are the *bones* of the Hand classed?

CARPUS.

127 What is the *situation* of the *Carpus?*

128 Of how many *bones* does the *Carpus* consist?

129 What is the *general form* of the *Carpus?*

130 How are the *bones* of the Carpus *arranged?*

131 What are the names of the *Carpal bones?*

132 What is the *situation* of the *Os Scaphoides?*

Quest.

133 What is the *general form* of the *Os Scaphoides?*

134 What is the *situation* of the *Os Lunare?*

135 What is the *general form* of the *Os Lunare?*

136 What is the *situation* of the *Os Cuneiforme?*

137 What is the *general form* of the *Os Cuneiforme?*

138 What is the *situation* of the *Os Pisiforme?*

139 What is the *form* of the *Os Pisiforme?*

140 What is the *situation* of the *Os Trapezium?*

141 What is the *form* of the *Os Trapezium?*

142 What is the *situation* and form of the *Os Trapezoides?*

143 What is the *situation* and form of the *Os Magnum?*

144 What is the *situation* of the *Os Unciforme?*

145 What is the *general form* of the *Os Unciforme?*

146 What is the structure of the Carpal Bones?

METACARPUS.

147 What is the *situation* of the Metacarpus?

148 Of how *many bones* does the Metacarpus consist?

149 What is the *general form* of the bones of the Metacarpus?

150 Into what parts are the *bones* of the Metacarpus generally *divided?*

151 What is the *form* of the *basis* of the Metacarpal bones?

152 What is the *form* of the *bodies* of the Metacarpal bones?

153 What is the *form* of the *heads* of the Metacarpal bones?

154 Which is the *largest* of the Metacarpal bones?

155 What is the *structure* of the Metacarpal bones?

156 What are the *connexions* of the Metacarpal bones?

BONES OF THE FINGERS.

157 *How many* are the *bones* of the *Fingers?*

158 How are the *bones* of the Fingers named?

159 What is the *form* of the *first bone* of the *Thumb?*

160 What is the *form* of the *second bone* of the *Thumb?*

161 What is the *form* of the *third bone* of the *Thumb?*

Quest.

162 What is the *form* of the *first Phalanges* of the Fingers?

163 What is the *form* of the *second Phalanges* of the Fingers?

164 What is the *form* of the *third Phalanges* of the Fingers?

SECTION IX.

OF THE BONES OF THE LOWER EXTREMITIES.

1 How are the Bones of the lower Extremities *divided?*

OS FEMORIS.

2 What is the *general situation* of the Os Femoris?

3 Into *what parts* is the *Os Femoris* divided?

4 What is the *form* of the *head* of the *Os Femoris?*

5 In what *direction* is the *head* of the *Os Femoris* placed?

6 Where is the *Fossula* of the *head* of the *Os Femoris* situated?

7 What is *attached* to the *edge* of the *Fossula* of the *Os Femoris?*

8 What is the *situation* of the *neck* of the *Os Femoris?*

9 What is the *direction* of the *neck* of the *Os Femoris?*

10 Where is the *Capsular Ligament* of the *head* of the *Os Femoris* inserted?

11 What is the name of the *great Tuberosities* situated at the root of the neck of the Os Femoris?

12 At what *particular part* of the base of the neck of the Os Femoris is the *Trochanter Major* situated?

13 What covers the *external convex* surface of the *Trochanter Major?*

14 What *muscle* is attached to the *rough broad anterior muscular mark* on the *great Trochanter?*

15 What is fixed to the posterior edge of the *great Trochanter?*

16 What is attached to the *sharp superior edge* of the *great Trochanter?*

17 What is *attached* to the *deep Fossa* of the *great Trochanter?*

Quest.

18 What is the *form* of the *body* of the Os Femoris?

19 Where is the *Trochanter Minor* situated?

20 What is *attached* to the *Trochanter Minor?*

21 Where is the *Linea Aspera* situated?

22 What Muscle is fixed to the *commencement* of the *Linea Aspera?*

23 What Muscles are attached to the *middle* of the *Linea Aspera?*

24 How does the *Linea Aspera terminate inferiorly?*

25 What is attached to the *outer ridge* of the *Linea Aspera?*

26 What is attached to the *inner ridge* of the *Linea Aspera?*

27 Over which of the ridges of the Linea Aspera do the Femoral vessels pass?

28 What is inserted into the *Tuberosity* which terminates the *inner ridge* of the *Linea Aspera?*

29 What is the *situation* and *direction* of the canal of the Medullary Artery of the Os Femoris?

30 What is the *form* of the *lower extremity* of the Os Femoris?

31 What is the *name* of the *two great Eminences* of which it consists?

32 Which of the *Condyles projects most inferiorly* and *posteriorly?*

33 Which of the *Condyles projects most anteriorly?*

34 What is situated between the two Condyles posteriorly?

35 What is transmitted through the great Notch of the Os Femoris?

36 What *Ligaments* are attached to the *inner side of the Notch* of the Os Femoris?

37 Where is the *Pulley* of the Os Femoris situated?

38 What are attached to the *small Tuberosities* immediately above the back of the Condyles of the Os Femoris?

39 What is the *structure* of the Os Femoris?

40 What are the *connexions* of the Os Femoris?

BONES OF THE LEG.

41 Of what *Bones* does the *Leg* consist?

TIBIA.

Quest.

42 What is the *situation* of the *Tibia?*

43 What is the *general form* of the Tibia?

44 Into what parts is the Tibia divided?

45 What is the *form* of the *superior articular surfaces* of the Tibia?

46 What *difference* is there in the *form* of the superior articular surfaces of the Tibia?

47 What is attached to the *Tuberosity between the superior* articular surfaces of the Tibia?

48 What is *inserted* into the *Tuberosity* behind the *inner part* of the *head* of the Tibia?

49 What is fixed to the *Tuberosity* behind the *outer part* of the *head* of the Tibia?

50 What is *attached* to the *Tuberosity* on the fore part of the *head* of the Tibia?

51 What is the *form* of the *body* of the Tibia?

52 What is attached to the *inner edge* of the Tibia?

53 What is the *situation* and *direction* of the Canal of the *Medullary Artery* of the Tibia?

54 What is the *form* of the *lower end* of the Tibia?

55 What is the *use* of the *Notch* on the *outside* on the lower end of the Tibia?

56 What is the name and *use* of the *process* on the *inside* of the lower end of the Tibia?

57 How is the *Trochlea* which receives the Astragalus formed?

58 What are the *connexions* of the Tibia?

PATELLA.

59 What is the *situation* of the Patella?

60 What is the *general form* of the Patella?

61 Into what *parts* is the Patella *divided?*

62 What is *inserted* into the *base* of the Patella?

63 What is fixed to the Apex of the Patella?

64 What is the *appearance* of the *inner*, or posterior side of the Patella?

65 Which of the *depressions* of the Patella is *deepest?*

66 What is the *structure* of the Patella?

67 What are the *connexions* of the Patella?

FIBULA.

Quest.

68 What is the *situation* of the Fibula?
69 What is the *general form* of the Fibula?
70 Into what *parts* is the Fibula *divided?*
71 What is the *form* of the *head* of the Fibula?
72 What is *fixed* to the *Tuberosity* of the *head* of the Fibula?
73 With what is the *articular surface* of the *head* of the Fibula articulated?
74 What is the *form* of the *body* of the Fibula?
75 To what *part of the body* of the Fibula is the *Interosseus Ligament* fixed?
76 What is the *situation* and *direction* of the *Canal* of the Medullary Artery of the Fibula?
77 What is the *form* of the *lower end* of the Fibula?
78 What is attached to the *inferior articular* surface of the Fibula?
79 What is attached to the *Tuberosity* of the lower end of the Fibula?
80 What are the *connexions* of the Fibula?

BONES OF THE FOOT.

81 How are the *Bones of the Foot divided?*

TARSUS.

82 What is the *situation* of the *Tarsus?*
83 Of what *Bones* does the Tarsus consist?
84 Which is the *superior Bone* of the Tarsus?
85 What is the *general form* of the *Astragalus?*
86 What is the *form* of the *superior articular surface* of the Astragalus?
87 What is the *appearance* of the *inferior surface* of the Astragalus?
88 With what are connected the *articular surfaces* of the inferior side of the Astragalus?
89 What is united to the anterior articular surface of the Astragalus?
90 What is the *situation* of the *Os Calcis?*
91 What is the *general form* of the *Os Calcis?*

Quest.

92 What is the *appearance* of the *superior surface* of the Os Calcis?

93 What is the appearance of the *Os Calcis* posteriorly?

94 What is attached to the *rough portion* at the posterior end of the Os Calcis?

95 What is the appearance of the *lower surface* of the Os Calcis?

96 What is the appearance of the *anterior side* of the Os Calcis?

97 What is attached to the *anterior side* of the Os Calcis?

98 What is the appearance of the outer side of the Os Calcis?

99 What is the *appearance* of the *inner side* of the Os Calcis?

100 What is lodged on the *inner side* of the concavity of the Os Calcis?

101 What is the *situation* of the *Os Scaphoides?*

102 What is the *form* of the *Os Scaphoides?*

103 What is attached to the *posterior concave side* of the *Os Scaphoides?*

104 What is *attached* to the *anterior convex side* of the *Os Scaphoides?*

105 What is fixed to the *Tuberosity* of the *Os Scaphoides?*

106 What is the *situation* of the *Os Cuboides?*

107 What is the *form* of the *Os Cuboides?*

108 What is the *appearance* of the *lower side* of the Os Cuboides?

109 What passes in the *groove* on the lower side of the Os Cuboides?

110 What is the appearance of the *posterior side* of the Os Cuboides?

111 What is united to the *posterior side* of the Os Cuboides?

112 What is the *appearance* of the *anterior side* of the Os Cuboides?

113 What is united to the *anterior side* of the Os Cuboides?

114 What is the *appearance of the inner side* of the Os Cuboides?

Quest.

115 What is attached to *cartilaginous surface* of the inner side of the Os Cuboides?

116 What is the *appearance of the outside* of the Os Cuboides?

117 What is the *appearance* of the *upper side* of the Os Cuboides?

118 What is the *situation* of the *Ossa Cuneiformia?*

119 What is the *relative size* of the *Ossa Cuneiformia?*

120 Into what *parts* are the *Ossa Cuneiformia* distinguished?

121 What is the *form* of the *Os Cuneiforme Internum?*

122 What is the *form* of the *Os Cuneiforme Medium?*

123 What is the *form* of the *Os Cuneiforme Externum?*

METATARSUS.

124 What is the *situation* of the METATARSUS?

125 Of how *many bones* does the *Metatarsus* consist?

126 What is the *general form* of the bones of the Metatarsus?

127 Into *what parts* are the bones of the Metatarsus generally divided?

128 What is the *form* of the *bases* of the Metatarsal Bones?

129 What is the *form* of the *bodies* of the Metatarsal Bones?

130 What is the *form* of the *heads* of the Metatarsal Bones?

131 Which is the largest of the Metatarsal Bones?

132 What is peculiar to the fifth Metatarsal Bone?

133 What are the *connexions* of the *Metatarsal Bones?*

BONES OF THE TOES.

134 What is the *number* of the bones of THE TOES?

135 How are the bones of the Toes *arranged?*

136 What is the *form* of the *first bone* of the great Toe?

137 What is the *form* of the *second bone* of the great Toe?

138 What is the *form* of the *first bones* of the Toes?

139 What is the *form* of the *second bones* of the Toes?

140 What is the *form* of the *third bones* of the Toes?

141 What is the *form* and *situation* of the *Sesamoid Bones?*

SECTION X.

OF THE FEMALE SKELETON.

Quest.

1 How do the *Bones of the Female* differ in general from those of the *Male?*

2 Whether is the *Skull* of the Female, or that of the Male, proportionally largest?

3 How does the *Os Frontis* of the Female differ from that of the Male?

4 How do the *Clavicles* of the Female differ from those of the Male?

5 How does the *Sternum* of the Female differ from that of the Male?

6 How do the *Cartilages* of the *true ribs* in the Female differ from those of the Male?

7 How do the Vertebræ of the Female differ from those of the Male?

8 How does the *Os Sacrum* of the Female differ from that in the Male?

9 How does the *Os Coccygis* of the Female differ from that of the Male?

10 How do the *Ossa Ilii* of the Female differ from those of the Male?

11 How does the *Arch* of the *Pubis*, and the *Ischiatic Notch* of the Female differ from these parts in the Male?

12 How do the *Tuberosities of the Ischia* of the Female differ from those of the Male?

13 How do the *Ossa Femorum* of the Female differ from those of the Male?

14 What part of the Female Skeleton offers the most striking differences from that of the Male?

SECTION XI.

OF CARTILAGES.

1 What are **Cartilages?**

2 How many kinds of Cartilages are there?

3 What are *Diarthrodial Cartilages?*

4 What are the *use* of Diarthrodial Cartilages?

Quest.
5 What are *Synarthrodial Cartilages?*
6 What are the *uses* of Synarthrodial Cartilages?
7 What are *articular Cartilages?*
8 What are the *uses* of articular Cartilages?
9 In what parts does Cartilage supply the place of bone?

SYNDESMOLOGY.

SECTION XII.

OF THE LIGAMENTS OF THE HEAD AND TRUNK.

1 What are LIGAMENTS?
2 How many *kinds* of *Ligaments* are there?
3 What are *Capsular Ligaments?*
4 What is the *use* of Capsular Ligaments?
5 What are *connecting Ligaments?*
6 What is the *use* of connecting Ligaments?
7 What *names* are usually given to the connecting Ligaments?
8 What other kinds of ligamentous substances are there?
9 What are the *Ligaments* of the *lower Jaw?*
10 What is the *situation* of the *capsular Ligament* of the lower Jaw?
11 What is the *situation* of the *lateral Ligament* of the lower Jaw?
12 What are the *Ligaments* of the *Vertebræ* in general?
13 What is the *situation* of the *common anterior* Ligament of the Vertebræ?
14 What is the *situation* of the *common posterior* Ligament of the Vertebræ?
15 What is the *situation* of the *crucial* or *intervertebral* Ligaments?
16 What is the *situation* of the *Capsules* of the *oblique Processes?*
17 What is the *situation* of the *intertransverse Ligaments?*
18 What is the *situation* of the *Ligamenta Subflava?*
19 What is the *situation* of the *interspinous* Ligaments?

Quest.

20 What are the *Ligaments peculiar* to the *Cervical Vertebræ?*

21 What is the *situation* of the *Ligamentum Nuchæ?*

22 What is the *situation* of the *transverse* Ligament of the Atlas?

23 What are the *Ligaments* from the *first Vertebra* to the *Occiput?*

24 What are the *Ligaments* from the *second Vertebra* to the *Occiput?*

25 What is the *situation* of the *perpendicular* Ligament?

26 What is the *situation* of the *lateral* Ligaments?

27 What are the *Ligaments* connecting the *Ribs* and *Vertebræ?*

28 What is the *situation* of the *Capsules* of the *heads* of the *Ribs?*

29 What is the *situation* of the *Capsules* of the *Tubercles* of the *Ribs?*

30 What is the *situation* of the *external Ligaments* of the *Necks* of the Ribs?

31 What is the *situation* of the *internal Ligaments* of the *Necks* of the Ribs?

32 What is the *situation* of the *external transverse* Ligaments?

33 What is the *situation* of the *internal transverse* Ligament?

34 What are the *Ligaments connecting* the *Ribs* to *each other?*

35 What are the *Ligaments connecting* the *Ribs* and *Sternum?*

36 What is the *situation* of the *Capsules* of the anterior ends of the Ribs?

37 What is the *situation* of the *external* and *internal transverse* Ligaments?

38 What are the *proper Ligaments* of the Sternum?

39 What are the *Ligaments* of the *Pelvis?*

40 What is the *situation* of *Poupart's Ligament?*

41 What is the situation of the annular Ligament?

42 What is the *situation* of the *Obturator Ligament?*

43 What is the *situation* of the *Transverse Ligament?*

44 What is the *situation* of the *Ilio-Sacral* Ligament?

45 What is the *situation* of the *Ligamenta Vaga?*

Quest.

46 What is the *situation* of the *Short Sacro-Ischiatic* Ligament?

47 What is the *situation* of the *Long Sacro-Ischiatic* Ligament?

48 What are the *Ligaments* of the *Os Coccygis?*

SECTION XIII.

OF THE LIGAMENTS OF THE UPPER EXTREMITY.

1 What are the *Ligaments* of the *Sternal end of the Clavicle?*

2 What is the *situation* of the *Capsular Ligament?*

3 What is the *situation* of the *interclavicular Ligament?*

4 What is the *situation* of the *Rhomboid Ligament?*

5 What are the *Ligaments* connecting the *Clavicle* and *Scapula?*

6 What is the *situation* of the *Capsular Ligament?*

7 What is the *situation* of the *Conoid Ligament?*

8 What is the *situation* of the *Trapezoid Ligament?*

9 What are the *Ligaments proper* to the *Scapula?*

10 What is the *situation* of the *proper anterior Ligament?*

11 What is the *situation* of the *proper posterior Ligament?*

12 What are the *Ligaments* connecting the *Scapula* and *Humerus?*

13 What is the *situation* of the *capsular Ligament?*

14 What is the situation of the *Tendon* of the *Biceps?*

15 What are the *Ligaments proper* to the *Humerus?*

16 What is the situation of the *external intermuscular Ligament?*

17 What is the situation of the *internal intermuscular Ligament?*

18 What are the *Ligaments* connecting the *Humerus* to the *Radius* and *Ulna?*

19 What is the *situation* of the *Capsular Ligament?*

20 What is the *situation* of the *external lateral Ligament?*

21 What is the *situation* of the *internal lateral Ligament?*

22 What are the *Ligaments* connecting the *Radius* and *Ulna?*

Quest.

23 What is the *situation* of the *Coronary Ligament?*
24 What is the *situation* of the *oblique Ligament?*
25 What is the *situation* of the *interosseous Ligament?*
26 What is the *situation* of the *Sacciform Ligament?*
27 What are the *Ligaments* from the *Radius* and *Ulna* to the *Carpus?*
28 What is the *situation* of the *Capsular Ligament?*
29 What is the *situation* of the *External Lateral Ligament?*
30 What is the *situation* of the *Internal Lateral Ligament?*
31 What are the *Ligaments* of the *Carpus?*
32 What is the *situation* of the *Capsular Ligament?*
33 What is the *situation* of the *Transverse Ligament?*
34 What is the *situation* of the *Posterior Annular Ligament?*
35 What is the *situation* of the *Anterior Annular Ligament?*
36 What is the *situation* of the *Vaginal Ligament?*
37 What are the *Ligaments* of the *Bases* of the *Metacarpal* Bones?
38 What is the *situation* of the *Capsular Ligament?*
39 What is the *situation* of the *Lateral Ligaments?*
40 What is the *situation* of the *Dorsal Ligaments?*
41 What is the *situation* of the *Palmar Ligament?*
42 What are the *Ligaments* of the *Heads* of the *Metacarpal* Bones?
43 What are the *Ligaments* of the *joints* of the *Fingers?*

SECTION XIV.

OF THE LIGAMENTS OF THE LOWER EXTREMITY.

1 What are the *Ligaments* connecting the *Os Innominatum* and *Femur?*
2 What is the *situation* of the *Capsular Ligament?*
3 What is the *situation* of the *Ligamentum Teres?*
4 What are the *Ligaments* connecting the *Femur* with the *Tibia* and *Fibula?*
5 What is the *situation* of the *Capsular Ligament?*
6 What is the *situation* of the *Popliteal Ligament?*

Quest.

7 What is the *situation* of the *External Lateral Ligament?*

8 What is the *situation* of the *Internal Lateral Ligament?*

9 What is the *situation* of the *Posterior Crucial Ligament?*

10 What is the *situation* of the *Anterior Crucial Ligament?*

11 What are the *Ligaments* of the *Patella?*

12 What is the *situation* of the *Anterior Ligament?*

13 What is the *situation* of the *Alar Ligaments?*

14 What are the *Ligaments* connecting the *Tibia* and *Fibula?*

15 What is the *situation* of the *Capsular Ligament?*

16 What is the *situation* of the *Interosseous Ligament?*

17 What is the *situation* of the *Transverse Ligaments?*

18 What are the *ligaments* connecting the *Tibia* and *Fibula* to the *Tarsus?*

19 What is the *situation* of the *Capsular Ligament?*

20 What is the *situation* of the *Deltoid Ligament?*

21 What is the *situation* of the *Anterior Ligament?*

22 What is the *situation* of the *Middle Ligament?*

23 What is the *situation* of the *Posterior Ligament?*

24 What are the *Ligaments* of the *Tarsus?*

25 What is the *situation* of the *Capsular Ligament?*

26 What is the *situation* of the *Transverse Ligament?*

27 What is the *situation* of the *Plantar Ligament?*

28 What is the *situation* of the *Internal Ligament?*

29 What are the *Ligaments* of the *Bases of the Metatarsal Bones?*

30 What is the *situation* of the *Capsular Ligaments?*

31 What is the *situation* of the *Lateral Ligaments?*

32 What is the *situation* of the *Dorsal Ligaments?*

33 What is the *situation* of the *Plantar Ligaments?*

34 What are the *Ligaments* of the *Heads* of the *Metatarsal Bones?*

35 What are the *Ligaments* of the *Joints of the Toes?*

36 How are the *Tendons* of the *Foot* and *Toes* kept in their situations?

MYOLOGY.

Quest.
1 What are the MUSCLES?
2 What is the *general appearance* of the Muscles?
3 What *general names* do Muscles derive from the arrangement of their Fibres?
4 Whence are the *particular names* of Muscles in general derived?
5 What are the TENDONS?
6 What is called the *origin* of a Muscle?
7 What is called the *insertion* of a Muscle?

SECTION XV.

OF THE MUSCLES OF THE TRUNK.

1 What Muscles *arise* from the *Trunk*, and are *inserted* into *it* and the *Linea Alba?*
2 What is the *origin, insertion* and *use* of the OBLIQUUS EXTERNUS ABDOMINIS DESCENDENS?
3 What is the *origin, insertion* and *use* of the OBLIQUUS INTERNUS ABDOMINIS ASCENDENS?
4 What is the *origin, insertion* and *use* of the TRANSVERSALIS ABDOMINIS?
5 What is the *origin, insertion* and *use* of the RECTUS ABDOMINIS?
6 Where is the *origin, insertion* and *use* of the PYRAMIDALIS?
7 What *Muscles arise* from the *Ribs* and *Vertebræ*, and terminate in a *Central Tendon?*
8 What is the *origin, insertion* and *use* of the *Greater Muscle* of the DIAPHRAGM?
9 What is the *origin, insertion* and *use* of the *lesser Muscle* of the DIAPHRAGM?
10 What *Muscle arises* from the *Pelvis* and *Vertebræ*, and is inserted into the *Ribs* and *Vertebræ?*
11 What is the *origin, insertion* and *use* of the LONGISSIMUS DORSI?

Quest.

12 What *Muscle arises* from the *Pelvis* and *Vertebræ*, and is inserted into the *Ribs?*

13 What is the *origin*, *insertion* and *use* of the SACRO-LUMBALIS?

14 What *Muscle arises* from the *Pelvis* and *Vertebræ*, and is inserted in the *Vertebræ?*

15 Where is the *origin*, *insertion* and *use* of the MULTIFIDUS SPINÆ?

16 What *Muscle arises* from the *Pelvis*, and is inserted into the *Ribs?*

17 What is the *origin*, *insertion* and *use* of the QUADRATUS LUMBORUM?

18 What *Muscles arise* from the *Vertebræ*, and are inserted into the *Ribs?*

19 What is the *origin*, *insertion* and *use* of the SCALENUS ANTICUS?

20 What is the *origin*, *insertion* and *use* of the SCALENUS MEDIUS?

21 What is the *origin*, *insertion* and *use* of the SCALENUS POSTICUS?

22 What is the *origin*, *insertion* and *use* of the CERVICALIS DESCENDENS?

23 What is the *origin*, *insertion* and *use* of the SERRATUS SUPERIOR POSTICUS?

24 What is the *origin*, *insertion* and *use* of the SERRATUS INFERIOR POSTICUS?

25 What *Muscles arise* from the *Vertebræ*, and are inserted into *them?*

26 What is the *origin*, *insertion* and *use* of the LONGUS COLLI?

27 What is the *origin*, *insertion* and *use* of the SPLENIUS CERVICIS?

28 What is the *origin*, *insertion* and *use* of the OBLIQUUS CAPITIS INFERIOR?

29 What is the *origin*, *insertion* and *use* of the TRANSVERSALIS COLLI?

30 What is the *origin*, *insertion* and *use* of the SEMISPINALIS COLLI?

31 What is the *origin*, *insertion* and *use* of the SPINALES DORSI?

32 What is the *origin*, *insertion* and *use* of the SEMISPINALES DORSI?

Quest.

33 What is the *origin*, *insertion* and *use* of the INTERSPINALES COLLI?

34 What are the INTERSPINALES DORSI et LUMBORUM?

35 What is the *origin*, *insertion* and *use* of the INTERTRANSVERSALES COLLI et LUMBORUM?

36 What are the INTERTRANSVERSALES DORSI?

37 What *Muscles arise* from one Rib and are *inserted* into another?

38 What is the *origin*, *insertion* and *use* of the INTERCOSTALES EXTERNI?

39 What is the *origin*, *insertion* and *use* of the INTERCOSTALES INTERNI?

40 What *Muscle arises* from the *Sternum* and is *inserted* into the *Ribs?*

41 Where is the *origin*, *insertion* and *use* of the STERNO-COSTALIS?

42 What *Muscle arises* from the *Vertebræ* and is *inserted* into the Pelvis?

43 What is the *origin*, *insertion* and *use* of the PSOAS PARVUS?

44 What *Muscles arise* from one *part* of the *Pelvis* and are *inserted* into *another?*

45 What is the *origin*, *insertion* and *use* of the COCCYGEUS?

46 What is the *origin*, *insertion* and *use* of the CURVATOR COCCYGIS?

SECTION XVI.

MUSCLES OF THE MALE ORGANS OF GENERATION AND ANUS.

1 What *Muscle arises* from the Obliquus Internus Abdominis and is *inserted* into the Testis?

2 What is the *origin*, *insertion* and *use* of the CREMASTER?

3 What is the DARTOS?

4 What *Muscles arise* from the Tuber Ischii and are *inserted* about the Penis?

5 What is the *origin*, *insertion* and *use* of the ERECTOR PENIS?

Quest.

6 What is the *origin*, *insertion* and *use* of the TRANSVERSUS PERINEI?

7 What is the *origin*, *insertion* and *use* of the TRANSVERSUS PERINEI ALTER?

8 What *Muscle arises* from one part of the Penis and is *inserted* into another?

9 What is the *origin*, *insertion* and *use* of the ACCELERATOR URINÆ, or EJACULATOR SEMINIS?

10 What *Muscle arises* from the Pubis and is *inserted* about the Prostate Gland?

11 What is the *origin*, *insertion* and *use* of the COMPRESSOR PROSTATÆ?

12 What *Muscles arise* from the Pelvis and are *inserted* about the Anus?

13 What is the *origin*, *insertion* and *use* of the LEVATOR ANI?

14 What is the *origin*, *insertion* and *use* of the SPHINCTER ANI EXTERNUS?

15 What is the SPHINCTER ANI INTERNUS?

SECTION XVII.

MUSCLES OF THE FEMALE ORGANS OF GENERATION AND ANUS.

1 What *Muscle arises* from the Ischium and is inserted into the *Clitoris?*

2 What is the *origin*, *insertion* and *use* of the ERECTOR CLITORIDIS?

3 What *Muscle arises* from the *Clitoris* and is *inserted* into the *Vaginæ?*

4 What is the *origin*, *insertion* and *use* of the SPHINCTER VAGINÆ?

5 What *Muscle arises* from the Tuber Ischii and is *inserted* into the Perineum?

6 What is the *origin*, *insertion* and *use* of the *Transversus Perinei?*

7 What *Muscle arises* from the Tuber Ischii and is *inserted* into the *Vagina?*

8 What is the *origin*, *insertion* and *use* of the TRANSVERSUS PERINEI ALTER?

Quest.

9 What *Muscle arises* from one part of the Clitoridis and is *inserted* into another?

10 What is the *origin, insertion* and *use* of the DEPRESSOR URETHRÆ?

11 What *Muscles arise* from the Pelvis and are *inserted* about the Anus?

12 What is the *origin, insertion* and *use* of the LEVATOR ANI?

13 What is the *origin, insertion* and *use* of the SPHINCTER ANI EXTERNUS?

14 What is the SPHINCTER ANI INTERNUS?

SECTION XVIII.

MUSCLES OF THE HEAD, FACE, &c.

1 What *Muscle arises* from the Integuments of the Breast and Shoulder, and is *inserted* into those of the Face?

2 What is the *origin, insertion* and *use* of the PLATYSMA MYOIDES?

3 What *Muscles arise* from the Sternum, Ribs, or Vertebræ, and are *inserted* into the Head?

4 What is the *origin, insertion* and *use* of the STERNO-CLEIDO-MASTOIDEUS?

5 What is the *origin, insertion* and *use* of the RECTUS CAPITIS ANTICUS MAJOR?

6 What is the *origin, insertion* and *use* of the RECTUS CAPITIS ANTICUS MINOR?

7 What is the *origin, insertion* and *use* of the RECTUS CAPITIS LATERALIS?

8 What is the *origin, insertion* and *use* of the SPLENIUS CAPITIS?

9 What is the *origin, insertion* and *use* of the COMPLEXUS?

10 What is the *origin, insertion* and *use* of the TRACHLEO MASTOIDEUS?

11 What is the *origin, insertion* and *use* of the RECTUS CAPITIS POSTICUS MAJOR?

12 What is the *origin, insertion* and *use* of the OBLIQUUS CAPITIS SUPERIOR?

Quest.

13 What is the *origin*, *insertion* and *use* of the RECTUS CAPITIS POSTICUS MINOR?

14 What *Muscles* arise from the Skull, and are inserted into its Integuments?

15 What is the *origin*, *insertion* and *use* of the OCCIPITO-FRONTALIS?

16 What is the *origin*, *insertion* and *use* of the CORRUGATOR SUPERCILII?

17 What *Muscles arise* from the Cranium, and are *inserted* into the Eyelids?

18 What is the *origin*, *insertion* and *use* of the LEVATOR PALPEBRÆ SUPERIORIS?

19 What is the *origin*, *insertion* and *use* of the ORBICULARIS PALPEBRARUM?

20 What *Muscles arise* from the Cranium, and are *inserted* into the Eyeball?

21 What is the *origin*, *insertion* and *use* of the LEVATOR OCULI?

22 What is the *origin*, *insertion* and *use* of the DEPRESSOR OCULI?

23 What is the *origin*, *insertion* and *use* of the ADDUCTOR OCULI?

24 What is the *origin*, *insertion* and *use* of the ABDUCTOR OCULI?

25 What is the *origin*, *insertion* and *use* of the TROCHLEARIS, or OBLIQUUS SUPERIOR?

26 What is the *origin*, *insertion* and *use* of the OBLIQUUS INFERIOR OCULI?

27 What *Muscles arise* from the Cranium and are *inserted* into the External Ear?

28 What is the *origin*, *insertion* and *use* of the ATTOLENS AUREM?

29 What is the *origin*, *insertion* and *use* of the ANTERIOR AURIS?

30 What is the *origin*, *insertion* and *use* of the RETRAHENS AUREM?

31 What *Muscles arise* from one part of the Pinna of the External Ear, and are *inserted* into another?

32 What is the *origin*, *insertion* and *use* of the HELICIS MAJOR?

33 What is the *origin*, *insertion* and *use* of the HELICIS MINOR?

Quest.

34 What is the *origin*, *insertion* and *use* of the TRAGICUS?

35 What is the *origin*, *insertion* and *use* of the ANTI-TRAGICUS?

36 What is the *origin*, *insertion* and *use* of the TRANSVERSUS AURIS?

37 What *Muscles arise* from the Cranium, and are *inserted* into the Ossicula Auditus?

38 What is the *origin*, *insertion* and *use* of the LAXATOR TYMPANI MAJOR?

39 What is the *origin*, *insertion* and *use* of the LAXATOR TYMPANI MINOR?

40 What is the *origin*, *insertion* and *use* of the TENSOR TYMPANI?

41 What is the *origin*, *insertion* and *use* of the STAPIDEUS?

42 What *Muscle arises* from one part of the Nasal Cartilage and is inserted into another?

43 What is the *origin*, *insertion* and *use* of the *Compressor Naris?*

44 What *Muscles arise* from the Cranium, and are *inserted* into the Nose and Lips?

45 What is the *origin*, *insertion* and *use* of the LEVATOR LABII SUPERIORIS ALÆQUE NASI?

46 What is the *origin*, *insertion* and *use* of the DEPRESSOR LABII SUPERIORIS ALÆQUE NASI?

47 What *Muscle arises* from the Nose and is inserted into the upper Lip?

48 What is the *origin*, *insertion* and *use* of the NASALIS LABII SUPERIORIS?

49 What *Muscles arise* from the Cranium, and are *inserted* into the Lips?

50 What is the *origin*, *insertion* and *use* of the DEPRESSOR LABII INFERIORIS?

51 What is the *origin*, *insertion* and *use* of the LEVATOR LABII INFERIORIS?

52 What is the *origin*, *insertion* and *use* of the DEPRESSOR ANGULI ORIS?

53 What is the *origin*, *insertion* and *use* of the BUCCINATOR?

Quest.

54 What is the *origin*, *insertion* and *use* of the ZYGOMATICUS MAJOR?

55 What is the *origin*, *insertion* and *use* of the ZYGOMATICUS MINOR?

56 What *Muscle arises* at one part of the Lips, and is *inserted* at another?

57 What is the *origin*, *insertion* and *use* of the ORBICULARIS ORIS?

58 What *Muscle arises* from one part of the upper Jaw, and is *inserted* into another?

59 What is the *origin*, *insertion* and *use* of the ANOMALUS MAXILLÆ SUPERIORIS?

60 What *Muscles arise* from the Cranium, and are *inserted* into the lower Jaw?

61 What is the *origin*, *insertion* and *use* of the TEMPORALIS?

62 What is the *origin*, *insertion* and *use* of the MASSETER?

63 What is the *origin*, *insertion* and *use* of the PTERYGOIDEUS EXTERNUS?

64 What is the *origin*, *insertion* and *use* of the PTERYGOIDEUS INTERNUS?

65 What is the *origin*, *insertion* and *use* of the DIGASTRICUS?

SECTION XIX.

LARYNX AND PHARYNX.*

LARYNX.

1 What is the LARYNX?

2 Where is the LARYNX *situated?*

3 Of what is the LARYNX *composed?*

4 Of how many CARTILAGES is the LARYNX composed?

5 What is the *situation* of the THYROID CARTILAGE?

6 What is the *form* of the THYROID CARTILAGE?

7 What is the *situation* of the CRICOID CARTILAGE?

8 What is the *form* of the CRICOID CARTILAGE?

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* The structure of the Larynx and Pharynx must necessarily be understood before their Muscles can be described.

Quest.

9 What is the *situation* of the ARYTENOID CARTILAGES?
10 What is the *form* of the ARYTENOID CARTILAGES?
11 What is the *situation* of the EPIGLOTTIS?
12 What is the *form* of the EPIGLOTTIS?
13 What LIGAMENTS does the Larynx possess?
14 How is the GLOTTIS formed?
15 What is the *use* of the LARYNX?

PHARYNX.

16 What is the PHARYNX?
17 What is the *situation* of the PHARYNX?
18 What is the *structure* of the PHARYNX?
19 Into what portions is the PHARYNX *divided?*
20 What is the *form* of the PHARYNX?
21 What is the *use* of the PHARYNX?

SECTION XX.

MUSCLES OF THE ORGANS OF VOICE AND DEGLUTITION.

1 What *Muscles arise* from the Cranium, and are *inserted* into the Larynx?
2 Describe the DIGASTRICUS.
3 What is the *origin, insertion* and *use* of the STYLO-HYOIDEUS?
4 What is the *origin, insertion* and *use* of the MYLO-HYOIDEUS?
5 What is the *origin, insertion* and *use* of the GENIO-HYOIDEUS?
6 What *Muscles arise* from the Trunk, and are *inserted* into the Larynx?
7 What is the *origin, insertion* and *use* of the STERNO-HYOIDEUS?
8 What is the *origin, insertion* and *use* of the STERNO-THYROIDEUS?
9 What *Muscle arises* from the Shoulder, and is *inserted* into the Larynx?
10 What is the *origin, insertion* and *use* of the OMO-HYOIDEUS?

Quest.

11 What *Muscles arise* from, and are *inserted* into, the Larynx?

12 What is the *origin*, *insertion* and *use* of the THYREO-HYOIDEUS?

13 What is the *origin*, *insertion* and *use* of the MUSCULUS GLANDULÆ THYROIDEÆ?

14 What is the *origin*, *insertion* and *use* of the CRICO-THYROIDEUS?

15 What is the *origin*, *insertion* and *use* of the CRICO-ARYTŒNOIDEUS POSTICUS?

16 What is the *origin*, *insertion* and *use* of the CRICO-ARYTŒNOIDEUS LATERALIS?

17 What is the *origin*, *insertion* and *use* of the THYREO-ARYTŒNOIDEUS MAJOR?

18 What is the *origin*, *insertion* and *use* of the THYREO-ARYTŒNOIDEUS MINOR?

19 What is the *origin*, *insertion* and *use* of the ARYTŒNOIDEUS OBLIQUUS?

20 What *Muscle arises* from one Arytœnoid Cartilage and is *inserted* into the other?

21 What is the *origin*, *insertion* and *use* of the ARYTŒNOIDEUS TRANSVERSUS?

22 What *Muscles arise* from the Cranium, and are *inserted* into the Tongue?

23 What is the *origin*, *insertion* and *use* of the GENIO-GLOSSUS?

24 What is the *origin*, *insertion* and *use* of the STYLO-GLOSSUS?

25 What *Muscle arises* from the Os Hyoides, and is *inserted* into the Tongue?

26 What is the *origin*, *insertion* and *use* of the HYO-GLOSSUS?

27 What *Muscle* is wholly situated in the Tongue?

28 What is the *origin*, *insertion* and *use* of the LINGUALIS?

29 What *Muscles arise* from the Cranium, and are *inserted* into the Palate?

30 What is the *origin*, *insertion* and *use* of the CIRCUMFLEXUS, or TENSOR PALATI?

31 What is the *origin*, *insertion* and *use* of the LEVATOR PALATI?

Quest.

32 What *Muscles arise* from the Larynx, and are *inserted* into the Epiglottis?

33 What is the *origin*, *insertion* and *use* of the THYREO-EPIGLOTTIDEUS MAJOR?

34 What is the *origin*, *insertion* and *use* of the THYREO-EPIGLOTTIDEUS MINOR?

35 What is the *origin*, *insertion* and *use* of the ARYTŒNO-EPIGLOTTIDEUS?

36 What *Muscle arises* from the Cranium, and is *inserted* into the Uvula?

37 What is the *origin*, *insertion* and *use* of the AZYGOS UVULÆ?

38 What *Muscle arises* from the Tongue, and is *inserted* into the Fauces?

39 What is the *origin*, *insertion* and *use* of the CONSTRICTOR ISTHMI FAUCIUM?

40 What *Muscles arise* from the Cranium, and are *inserted* into the Pharynx?

41 What is the *origin*, *insertion* and *use* of the STYLO-PHARYNGEUS?

42 What is the *origin*, *insertion* and *use* of the CONSTRICTOR PHARYNGIS SUPERIOR?

43 What *Muscles arise* from the Larynx, and are *inserted* into the Pharynx?

44 What is the *origin*, *insertion* and *use* of the CONSTRICTOR PHARYNGIS MEDIUS?

45 What is the *origin*, *insertion* and *use* of the CONSTRICTOR PHARYNGIS INFERIOR?

46 What is the *origin*, *insertion* and *use* of the PALATO-PHARYNGEUS?

SECTION XXI.

MUSCLES OF THE UPPER EXTREMITY.

1 What *Muscles arise* from the Trunk, and are *inserted* into the Shoulder?

2 What is the *origin*, *insertion* and *use* of the PECTORALIS MINOR?

3 What is the *origin*, *insertion* and *use* of the ANGULARIS SCAPULÆ?

Quest.

4 What is the *origin*, *insertion* and *use* of the TRAPEZIUS?

5 What is the *origin*, *insertion* and *use* of the RHOMBOIDEUS?

6 What is the *origin*, *insertion* and *use* of the SERRATUS MAGNUS?

7 What is the *origin*, *insertion* and *use* of the SUBCLAVIUS?

8 What *Muscles arise* from the *Trunk*, and are *inserted* into the Humerus?

9 What is the *origin*, *insertion* and *use* of the PECTORALIS MAJOR?

10 What is the *origin*, *insertion* and *use* of the LATISSIMUS DORSI?

11 What *Muscles arise* from the Shoulder, and are *inserted* into the Os Humeri?

12 What is the *origin*, *insertion* and *use* of the DELTOIDES?

13 What is the *origin*, *insertion* and *use* of the CORACO-BRACHIALIS?

14 What is the *origin*, *insertion* and *use* of the SUPRA-SPINATUS?

15 What is the *origin*, *insertion* and *use* of the INFRA-SPINATUS?

16 What is the *origin*, *insertion* and *use* of the TERES MINOR?

17 What is the *origin*, *insertion* and *use* of the TERES MAJOR?

18 What is the *origin*, *insertion* and *use* of the SUBSCAPULARIS?

19 What *Muscles arise* from the Shoulder, and are *inserted* into the Fore-arm?

20 What is the *origin*, *insertion* and *use* of the BICEPS CUBITI?

21 What is the *origin*, *insertion* and *use* of the LONG HEAD OF THE TRICEPS?

22 What *Muscles arise* from the Humerus, and are *inserted* into the Fore-arm?

23 What is the *origin*, *insertion* and *use* of the SHORTER HEADS OF THE TRICEPS?

24 What is the *origin*, *insertion* and *use* of the ANCONEUS?

Quest.

25 What is the *origin*, *insertion* and *use* of the BRACHIALIS INTERNUS?

26 What is the *origin*, *insertion* and *use* of the SUPINATOR RADII LONGUS?

27 What is the *origin*, *insertion* and *use* of the SUPINATOR RADII BREVIS?

28 What is the *origin*, *insertion* and *use* of the PRONATOR RADII TERES?

29 What *Muscles arise* from the Humerus, and are *inserted* into the Hand?

30 What is the *origin*, *insertion* and *use* of the FLEXOR CARPI ULNARIS?

31 What is the *origin*, *insertion* and *use* of the PALMARIS LONGUS?

32 What is the *origin*, *insertion* and *use* of the FLEXOR CARPI RADIALIS?

33 What is the *origin*, *insertion* and *use* of the EXTENSOR CARPI RADIALIS LONGIOR?

34 What is the *origin*, *insertion* and *use* of the EXTENSOR CARPI RADIALIS BREVIOR?

35 What is the *origin*, *insertion* and *use* of the EXTENSOR CARPI ULNARIS?

36 What *Muscles arise* from the Humerus and are *inserted* into the Fingers?

37 What is the *origin*, *insertion* and *use* of the FLEXOR DIGITORUM SUBLIMIS PERFORATUS?

38 What is the *origin*, *insertion* and *use* of the FLEXOR LONGUS POLLICIS?

39 What is the *origin*, *insertion* and *use* of the EXTENSOR-DIGITORUM COMMUNIS?

40 What *Muscle arises* from the Ulna and Interosseous Ligament, and is *inserted* into the Phalanges of the Fingers?

41 What is the *origin*, *insertion* and *use* of the FLEXOR DIGITORUM PROFUNDUS PERFORANS?

42 What *Muscles arise* from the Tendons of the Flexor Profundus, and are *inserted* into the Phalanges of the Fingers?

43 What is the *origin*, *insertion* and *use* of the LUMBRICALES?

44 What *Muscles arise* from the Fore-arm, and are *inserted* into the Fingers?

Quest.

45 What is the *origin*, *insertion* and *use* of the Extensor Ossis Metacarpi?

46 What is the *origin*, *insertion* and *use* of the Extensor Primi Internodii?.

47 What is the *origin*, *insertion* and *use* of the Extensor Secundi Internodii?

48 What is the *origin*, *insertion* and *use* of the Flexor Longus?

49 What is the *origin*, *insertion* and *use* of the Indicator?

50 What *Muscle arises* from the Ulna, and is *inserted* into the Radius?

51 What is the *origin*, *insertion* and *use* of the Pronator Quadratus?

52 What *Muscle arises* from the wrist, and is *inserted* into the Integuments of the Hand?

53 What is the *origin*, *insertion* and *use* of the Palmaris Brevis?

54 What *Muscles arise* from the wrist, and are *inserted* into the Thumb?

55 What is the *origin*, *insertion* and *use* of the Abductor Pollicis?

56 What is the *origin*, *insertion* and *use* of the Flexor Ossis Metacarpi Pollicis?

57 What is the *origin*, *insertion* and *use* of the Flexor Brevis Pollicis?

58 What Muscle *arises* from the wrist, and is *inserted* into the Fore-finger?

59 What is the *origin*, *insertion* and *use* of the Abductor Indicis?

60 What *Muscles arise* from the wrist, and are *inserted* into the little Finger?

61 What is the *origin*, *insertion* and *use* of the Abductor Minimi Digiti Manus?

62 What is the *origin*, *insertion* and *use* of the Adductor Metacarpi Minimi Digiti?

63 What is the *origin*, *insertion* and *use* of the Flexor Parvus Minimi Digiti?

64 What *Muscle arises* from the Metacarpus, and is *inserted* into the Thumb?

65 What is the *origin*, *insertion* and *use* of the Adductor Pollicis?

Quest.

66 What *Muscles arise* from the Metacarpus, and are *inserted* into the Fingers?

67 What is the *origin*, *insertion* and *use* of the PRIOR INDICIS?

68 What is the *origin*, *insertion* and *use* of the POSTERIOR INDICIS?

69 What is the *origin*, *insertion* and *use* of the PRIOR MEDII?

70 What is the *origin*, *insertion* and *use* of the POSTERIOR MEDII?

71 What is the *origin*, *insertion* and *use* of the PRIOR ANNULARIS?

72 What is the *origin*, *insertion* and *use* of the POSTERIOR ANNULARIS?

73 What is the *origin*, *insertion* and *use* of the INTEROSSEOUS AURICULARIS?

SECTION XXII.

MUSCLES OF THE LOWER EXTREMITY.

1 What *Muscle arises* from the Trunk, and is *inserted* into the Femur?

2 What is the *origin*, *insertion* and *use* of the PSOAS MAGNUS?

3 What *Muscles arise* from the Pelvis, and are *inserted* into the Femur?

4 What is the *origin*, *insertion* and *use* of the GLUTEUS MAXIMUS?

5 What is the *origin*, *insertion* and *use* of the GLUTEUS MEDIUS?

6 What is the *origin*, *insertion* and *use* of the GLUTEUS MINIMUS?

7 What is the *origin*, *insertion* and *use* of the PYRIFORMIS?

8 What is the *origin*, *insertion* and *use* of the OBTURATOR INTERNUS?

9 What is the *origin*, *insertion* and *use* of the GEMINI?

10 What is the *origin*, *insertion* and *use* of the QUADRATUS FEMORIS?

11 What is the origin, insertion and use of the ILIACUS INTERNUS?

Quest.

12 What is the *origin*, *insertion* and *use* of the PECTINALIS?

13 What is the *origin*, *insertion* and *use* of the OBTURATOR EXTERNUS?

14 What is the *origin*, *insertion* and *use* of the ADDUCTOR LONGUS FEMORIS?

15 What is the *origin*, *insertion* and *use* of the ADDUCTOR BREVIS FEMORIS?

16 What is the *origin*, *insertion* and *use* of the ADDUCTOR MAGNUS FEMORIS?

17 What *Muscle arises* from the Pelvis, and is *inserted* into the Fascia of the thigh?

18 What is the origin, insertion and use of the Tensor Vaginæ Femoris?

19 What Muscles *arise* from the Pelvis, and are *inserted* into the Leg?

20 What is the *origin*, *insertion* and *use* of the RECTUS CRURIS?

21 What is the *origin*, *insertion* and *use* of the SARTORIUS?

22 What is the *origin*, *insertion* and *use* of the GRACILIS?

23 What is the *origin*, *insertion* and *use* of the SEMITENDINOSUS?

24 What is the *origin*, *insertion* and *use* of the SEMIMEMBRANOSUS?

25 What is the *origin*, *insertion* and *use* of the LONG HEAD OF THE BICEPS?

26 What *Muscles arise* from the Femur, and are *inserted* into the Leg?

27 What is the *origin*, *insertion* and *use* of the CRURALIS?

28 What is the *origin*, *insertion* and *use* of the VASTUS EXTERNUS?

29 What is the *origin*, *insertion* and *use* of the VASTUS INTERNUS?

30 What is the *origin*, *insertion* and *use* of the SHORT HEAD OF THE BICEPS?

31 What is the *origin*, *insertion* and *use* of the POPLITEUS?

32 What *Muscles arise* from the Femur, and are *inserted* into the Foot?

Quest.

33 What is the *origin*, *insertion* and *use* of the GASTROCNEMIUS?

34 What is the *origin*, *insertion* and *use* of the PLANTARIS?

35 What *Muscles arise* from the Leg, and are *inserted* into the Foot?

36 What is the *origin*, *insertion* and *use* of the SOLEUS?

37 What is the *origin*, *insertion* and *use* of the TIBIALIS POSTICUS?

38 What is the *origin*, *insertion* and *use* of the PERONEUS LONGUS?

39 What is the *origin*, *insertion* and *use* of the PERONEUS BREVIS?

40 What is the *origin*, *insertion* and *use* of the TIBIALIS ANTICUS?

41 What is the *origin*, *insertion* and *use* of the PERONEUS TERTIUS, or NONUS VESALII?

42 What *Muscles arise* from the Leg, and are *inserted* into the Toes?

43 What is the *origin*, *insertion* and *use* of the EXTENSOR LONGUS DIGITORUM PEDIS?

44 What is the *origin*, *insertion* and *use* of the EXTENSOR PROPRIUS POLLICIS PEDIS?

45 What is the *origin*, *insertion* and *use* of the FLEXOR LONGUS DIGITORUM PEDIS PROFUNDUS PERFORANS?

46 What is the *origin*, *insertion* and *use* of the FLEXOR LONGUS POLLICIS PEDIS?

47 What *Muscles arise* from the Tarsus and Metatarsus, and are *inserted* into the Toes in general?

48 What is the *origin*, *insertion* and *use* of the EXTENSOR BREVIS DIGITORUM PEDIS?

49 What is the *origin*, *insertion* and *use* of the FLEXOR BREVIS DIGITORUM PEDIS?

50 What is the *origin*, *insertion* and *use* of the FLEXOR DIGITORUM ACCESSORIUS, or MASSA CARNEA JACOBI SYLVII?

51 What *Muscles arise* from the Tendons of the Flexor Longus, and are *inserted* into the Toes?

52 What is the *origin*, *insertion* and *use* of the LUMBRICALES PEDIS?

Quest.

53 What *Muscles arise* from the Tarsus and Metatarsus, and are *inserted* into the Toes?

54 What is the *origin*, *insertion* and *use* of the ADDUCTOR POLLICIS PEDIS?

55 What is the *origin*, *insertion* and *use* of the FLEXOR BREVIS POLLICIS?

56 What is the *origin*, *insertion* and *use* of the ABDUCTOR POLLICIS PEDIS?

57 What is the *origin*, *insertion* and *use* of the ADDUCTOR MINIMI DIGITI PEDIS?

58 What is the *origin*, *insertion* and *use* of the FLEXOR BREVIS MINIMI DIGITI PEDIS?

59 What is the *origin*, *insertion* and *use* of the ABDUCTOR MINIMI DIGITI PEDIS?

60 What is the *origin*, *insertion* and *use* of the ADDUCTOR INDICIS PEDIS?

61 What is the *origin*, *insertion* and *use* of the ABDUCTOR INDICIS PEDIS?

62 What is the *origin*, *insertion* and *use* of the ADDUCTOR MEDII DIGITI PEDIS?

63 What is the *origin*, *insertion* and *use* of the ABDUCTOR MEDII DIGITI PEDIS?

64 What is the *origin*, *insertion* and *use* of the ADDUCTOR TERTII DIGITI PEDIS?

65 What is the *origin*, *insertion* and *use* of the ABDUCTOR TERTII DIGITI PEDIS?

66 What *Muscle arises* from one bone of the Metatarsus, and is *inserted* into another?

67 What is the *origin*, *insertion* and *use* of the TRANSVERSALIS PEDIS?

SECTION XXIII.

BURSÆ MUCOSÆ.

1 What are the BURSÆ MUCOSÆ?

2 What are the *uses* of the BURSÆ MUCOSÆ?

3 Where are the BURSÆ MUCOSÆ uniformly *situated?*

4 What is the structure of the BURSÆ MUCOSÆ?

5 How are the BURSÆ MUCOSÆ connected with the surrounding parts?

6 How much fluid do the BURSÆ MUCOSÆ contain?

SECTION XXIV.

FASCIÆ.

Quest.

1 What are the Fasciæ?

2 Enumerate the most important of the Fasciæ.

3 What are the *attachments* of the Temporal Fascia?

4 What is the texture of the Fascia of the Fore-arm?

5 Whence is the Fascia of the Fore-arm derived?

6 Whence is the Palmar Fascia derived?

7 Whence is the Femoral Fascia derived?

8 Where are the Fasciæ of the Extremities strongest?

SPLANCHNOLOGY.

1 What is Splanchnology?

2 Where are the Viscera chiefly situated?

3 What are the *names* of the great cavities of the body?

SECTION XXV.

THORACIC VISCERA.

1 What is the situation of the Thorax?

2 How is the Thorax formed?

3 What is the *general figure* of the Thorax?

4 What are the *Viscera* of the Thorax?

PLEURA.

5 What is the situation of the Pleura?

6 What is the structure of the Pleura?

7 What is the use of the Pleura?

8 What is the name of the *Duplicature* of the Pleura?

9 How is the Mediastinum formed?

10 What *Cavities* are situated between the Duplicature of the Pleuræ?

11 What is *situated* in the *anterior Cavity* of the *Mediastinum?*

Quest.

12 What is *situated* in the *middle Cavity* of the *Mediastinum?*

13 What is *contained* in the *posterior Cavity* of the *Mediastinum?*

14 To what part of the Sternum is the *Mediastinum* attached?

15 What *names* have been given to the other parts of the PLEURA?

16 How is the *inner Surface* of the PLEURA moistened?

17 Whence are the *Arteries* of the PLEURA derived?

18 Whither do the *Veins* of the PLEURA pass?

19 Whence are the *Nerves* of the PLEURA derived?

THYMUS GLAND.

20 What is the *situation* of the THYMUS?

21 What is the *form* of the THYMUS?

22 What is the *structure* of the THYMUS?

23 Whether is the THYMUS largest in the *Fœtus* or the *Adult?*

24 What is the *use* of the THYMUS?

PERICARDIUM.

25 What is the PERICARDIUM?

26 What is the *situation* of the PERICARDIUM?

27 What is the *form* of the PERICARDIUM?

28 What is the *structure* of the PERICARDIUM?

29 What are the *connexions* of the PERICARDIUM?

30 How is the *inner Surface* of the PERICARDIUM moistened?

31 Whence is the LIQUA PERICARDII derived?

HEART.

32 What is the HEART?

33 What is the *situation* of the HEART?

34 What is the *form* of the HEART?

35 Into what parts is the HEART generally divided?

36 Into what *Cavities* is the HEART divided?

37 What *communication* exists between the Cavities of the HEART?

38 What is the use of the AURICLES?

39 What is the use of the VENTRICLES?

RIGHT AURICLE.

Quest.

40 What is the *situation* of the RIGHT AURICLE?

41 How is the RIGHT AURICLE *separated* from the left?

42 What are the MUSCULI PECTINATI?

43 What *Veins* open into the RIGHT AURICLE?

44 What is the *Appendix* to the AURICLE?

45 Where does the *Vena Cava Superior* open into the RIGHT AURICLE?

46 Where does the *Vena Cava Inferior* open into the RIGHT AURICLE?

47 Where is the *Tuberculum Loweri* situated?

48 Where does the *Coronary* Vein open into the RIGHT AURICLE?

49 How is the *mouth* of the *Coronary* Vein protected?

50 What is the *Valve of Eustachius?*

RIGHT VENTRICLE.

51 What is the *situation* of the RIGHT VENTRICLE?

52 Whether is the *right* or *left Ventricle* largest?

53 What are the *Carniæ Columnæ* of the VENTRICLE?

54 What are the *Cordæ Tendiniæ* of the VENTRICLE?

55 How is the *communication* between the RIGHT AURICLE and VENTRICLE protected?

56 What is the *construction* of the TRICUSPID VALVE?

57 What is the *use* of the TRICUSPID VALVE?

58 What Artery *arises* from the RIGHT VENTRICLE?

59 How is the *mouth* of the *Pulmonary Artery* protected?

60 What is the particular *form* of the SEMILUNAR VALVES?

61 What is the *use* of the SEMILUNAR VALVES?

LEFT AURICLE.

62 What is the *situation* of the LEFT AURICLE?

63 Whether is the Cavity of the LEFT or of the RIGHT AURICLE smallest?

64 What is the general structure of the LEFT AURICLE?

65 What *Veins* open into the LEFT AURICLE?

LEFT VENTRICLE.

Quest.

66 What is the *situation* of the LEFT VENTRICLE?

67 What is the *general structure* of the LEFT VENTRICLE?

68 How is the *communication* between the *left Auricle and Ventricle* protected?

69 What is the *construction* of the MITRAL VALVE?

70 What *Artery* arises from the LEFT VENTRICLE?

71 How is the *mouth* of the *Aorta* protected?

72 What is the structure and use of the *Semilunar Valves* of the Aorta?

ARTERIES, VEINS, AND NERVES OF THE HEART.

73 Whence are the CORONARY ARTERIES derived?

74 What is the *course* and *distribution* of the CORONARY ARTERIES?

75 Where do the CORONARY VEINS terminate?

76 Whence are the NERVES of the Heart derived?

TRACHEA.

77 What is the *situation* of the TRACHEA?

78 What is the *form* of the TRACHEA?

79 What is the *structure* of the TRACHEA?

80 Into what does the TRACHEA *divide?*

81 Where does the TRACHEA *divide?*

82 How is the TRACHEA lined?

83 How many coats does the TRACHEA possess?

84 Whence is the external coat of the TRACHEA derived?

85 Whence is the second coat of the TRACHEA derived?

86 What forms the third coat of the TRACHEA?

LUNGS.

87 What is the *situation* of the LUNGS?

88 What is the general *form* of the LUNGS?

89 Into what portions are the LUNGS *divided?*

90 In what part of the LUNGS is the *Notch* situated, which is caused by the Apex of the Heart?

Quest.

91 What is the *structure* of the LUNGS?
92 By what Membrane are the Lungs *invested?*
93 Where are the BRONCHIA *ramified?*
94 What is the *form* of the BRONCHIA?
95 What *structure* do the minute ramifications of the BRONCHIA assume?
96 How do the *Bronchial Tubes* terminate?
97 How are the *Air Cells connected?*
98 What are the *bundles* of the Air Cells termed?
99 What is the *structure* of the BRONCHIA?
100 What is the *relative situation* of the Bronchial Vessels to the Branches of the Pulmonary Artery and Vein?
101 What is the *Interlobular Substance?*
102 What effect is produced by *inflating* the *Interlobular Substance?*

ARTERIES, VEINS, AND NERVES OF THE LUNGS.

103 What are the *blood Vessels* of the LUNGS?
104 How is the *Pulmonary Artery* ramified in the LUNGS?
105 Which are the NUTRIENT ARTERIES of the LUNGS?
106 What Veins receive the Blood of the *Bronchial Arteries?*
107 Whither do the *Bronchial Veins* pass?
108 What Blood do the *Pulmonary Veins* receive?
109 How many *Pulmonary Veins* are there?
110 Whither do the *Pulmonary Veins* pass?
111 Whence are the *Nerves* of the LUNGS derived?

BRONCHIAL GLANDS.

112 Where are the BRONCHIAL GLANDS *situated?*
113 What is the appearance of the BRONCHIAL GLANDS?
114 To what *kind of Glands* do the Bronchial belong?

SECTION XXVI.

CIRCULATION OF THE BLOOD.

Quest.

1 How is the Circulation of the Blood effected?
2 What is the *Diastole* of the Heart?
3 What is the *Systole* of the Heart?
4 Describe the whole course of the Blood.
5 What sensible change is produced on the Blood in the Lungs?

SECTION XXVII.

RESPIRATION.

1 What is Respiration?
2 How is Inspiration performed?
3 How is Expiration performed?

SECTION XXVIII.

ABDOMINAL VISCERA.

1 Where is the Cavity of the Abdomen *situated?*
2 How is the Cavity of the Abdomen *formed?*
3 What are the *Regions* of the Abdomen?
4 What are the *Boundaries* of the Epigastric Region?
5 How is the Epigastric Region *subdivided?*
6 What are the *Boundaries* of the Umbilical Region?
7 How is the Umbilical Region *subdivided?*
8 What are the *Boundaries* of the Hypogastric Region?
9 How is the Hypogastric Region *subdivided?*
10 What is the *Membrane* called which lines the Cavity of the Abdomen?
11 What are the *contents* of the Abdomen?

PERITONEUM.

12 What is the *situation* of the Peritoneum?
13 What is the *structure* of the Peritoneum?
14 What is the appearance of the *outer surface* of the Peritoneum?

Quest.

15 What is the appearance of the *inner surface* of the PERITONEUM?

16 How is the PERITONEUM *moistened?*

17 What are the *Duplicatures* of the PERITONEUM?

18 What are the *Processes* of the PERITONEUM?

19 What *Ligamentary Cords* are seen upon the anterior surface of the PERITONEUM?

STOMACH.

20 What is the STOMACH?

21 Where is the STOMACH *situated?*

22 What is the *form* of the STOMACH?

23 Where is the *greater Extremity* of the STOMACH situated?

24 Where is the *lesser Extremity* of the STOMACH situated?

25 Where is the *lesser Curvature* of the STOMACH situated?

26 Where is the *greater Curvature* of the STOMACH situated?

27 How many *Openings* has the STOMACH?

28 What are the *Names* of the *Orifices* or *Openings* of the STOMACH?

29 Where is the CARDIAC ORIFICE of the stomach situated?

30 Where is the PYLORIC ORIFICE of the stomach situated?

31 What is the *relative situation* of the CARDIA and PYLORUS?

32 Of how *many Coats* does the STOMACH consist?

33 What are the *Names* of the *Coats* of the Stomach?

34 What is the *situation* of the *Peritoneal Coat* of the Stomach?

35 What is the *situation* of the *Muscular Coat* of the Stomach?

36 Of how many *Planes of Fibres* does the *Muscular Coat* of the Stomach consist?

37 What is the *course* of the *External Plane* of Fibres forming the Muscular Coat of the Stomach?

38 What is the *course* of the *Internal Plane* of Fibres forming the Muscular Coat of the Stomach?

Quest.

39 What is the *situation* of the *Nervous Coat* of the Stomach?

40 What is the *structure* of the *Nervous Coat* of the Stomach?

41 What is the *situation* of the *Villous Coat* of the Stomach?

42 What is the *structure* of the *Villous Coat* of the Stomach?

43 How are the *Rugæ* of the Stomach formed?

44 What is the *direction* of the *Rugæ* of the Stomach?

45 Whence are the *Nerves* of the Stomach derived?

46 Whence are the *Arteries* of the Stomach derived?

47 Whither do the *Veins* of the Stomach pass?

INTESTINES.

48 What are the INTESTINES?

49 How are the Intestines divided?

DUODENUM.

50 What is the *situation* of the DUODENUM?

51 What is the *length* of the DUODENUM?

52 What is the *course* of the DUODENUM?

53 How is the DUODENUM *fixed?*

54 Of how *many Coats* does the DUODENUM consist?

55 What is peculiar to the *Peritoneal Coat* of the DUODENUM?

56 What is the peculiarity of the *Muscular Coat* of the DUODENUM?

57 What is the *peculiar disposition* of the Nervous and Villous Coats of the small Intestines?

58 What is the *form* of the *Valvulæ Conniventes?*

59 In what Intestines are the *Valvulæ Conniventes largest* and *most frequent?*

60 How do the *Villi* of the DUODENUM differ from those of the Jejunum?

61 Where do the *Biliary* and *Pancreatic Ducts* open into the DUODENUM?

JEJUNUM AND ILIUM.

Quest.

62 How is the termination of the JEJUNUM distinguished from the beginning of the ILIUM?
63 What is the *course* of the JEJUNUM?
64 How do the *Valvulæ Conniventes* of the JEJUNUM differ from those of the DUODENUM and ILIUM?
65 What *Glands* are found in the JEJUNUM and ILIUM?
66 Where are these Glands most numerous?

CŒCUM.

67 What is the CŒCUM?
68 What is the *situation* of the CŒCUM?
69 What is the *Appendix* of the CŒCUM named?
70 Where does the *Appendix Cæci Vermiformis* open into the CŒCUM?
71 What is the *size* of the *Appendix Cæci Vermiformis?*
72 What is the *structure* of the *Appendix Cæci Vermiformis?*
73 What is the *use* of the *Appendix Cæci Vermiformis?*

COLON.

74 What is the *situation* of the COLON?
75 What is the *course* of the COLON?
76 What is the name given to the *Convoluted Termination* of the COLON?
77 What guards the *opening* of the small into the large Intestines?
78 What is the form of this *opening?*
79 What is the structure of the large Intestines?
80 What are the *Bands* of the COLON?
81 What are the Cavities called which are formed by the contraction of the Bands of the COLON?
82 What are the *Appendices Coli Adiposæ?*

RECTUM.

83 What is the *situation* of the RECTUM?
84 What is the *course* of the RECTUM?
85 In what does the RECTUM *terminate?*

Quest.

86 How does the *Membranous Coat* of the RECTUM differ from that of the other Intestines?

87 How does the *Muscular Coat* of the RECTUM differ from that of the other Intestines?

88 How do the *Nervous* and *Villous Coats* of the RECTUM differ from those of the other Intestines?

89 How are the *Rugæ* arranged?

90 Is the RECTUM supplied with *Glands?*

MESENTERY.

91 How is the MESENTERY *formed?*

92 Into what parts is the MESENTERY *divided?*

93 Where does the MESENTERY *begin?*

94 What is the *course* of the MESENTERY?

95 What is the *form* of the MESENTERY?

96 How are the *Laminæ* of the MESENTERY connected?

97 What is contained between the *Laminæ* of the MESENTERY?

98 What is the MESO-COLON?

99 Where does the MESO-COLON commence?

100 Where is the *Ligamentum Coli Dextrum* situated?

101 How is the *Ligamentum Coli Dextrum* formed?

102 What is the course of the MESO-COLON after the formation of the Ligamentum Dextrum?

103 Where does the MESO-COLON form the *Ligamentum Coli Sinistrum?*

104 What is the *course* of the MESO-COLON after the formation of the Ligamentum Sinistrum?

105 Where is the MESO-RECTUM *situated?*

LIVER.

106 What is the LIVER?

107 Where is the LIVER *situated?*

108 What is the *form* of the LIVER?

109 Into what parts is the Liver divided?

110 How is the *right Lobe* divided from the *left?*

111 Where is the *Lobulus Spigilii* situated?

112 How many *depressions* are seen on the under side of the LIVER?

113 What are the *depressions* of the LIVER called?

Quest.

114 Where is the *great Fissure* of the LIVER situated?
115 Where is the *Sinus* of the *Vena Portæ* situated?
116 Where is the *Sinus* of the *Vena Cava* situated?
117 Where is the *depression* for the *Gall-Bladder* situated?
118 How many *Ligaments* does the LIVER possess?
119 What are the *names* of the *Ligaments* of the LIVER?
120 How are the *Ligaments* of the LIVER formed?
121 To what does the *Middle* or *Broad Ligament* of the LIVER connect it?
122 Where is the *round Ligament* of the LIVER situated?
123 To what do the *right* and *left Ligaments* of the LIVER connect it?
124 To what does the Ligament of the Liver called *Coronary* connect it?
125 What is the *structure* of the LIVER?
126 By what are the *vessels* of the LIVER enveloped?
127 What are the *vessels* of the LIVER?
128 By what *vessels* is the blood carried to the LIVER?
129 Of what *use* is the *Hepatic Artery?*
130 What is the *use* of the *Vena Portæ?*
131 How many *great Branches* are generally given off from the *Vena Portæ?*
132 In what do the *ramifications* of the Vena Portæ *terminate?*
133 What is the *use* of the *Folliculi* in which the ramifications of the Vena Portæ terminate?
134 What is the name of the small *excretory Ducts* of the Hepatic Folliculi?
135 In what do the *Pori-biliarii* terminate?
136 Where does the *Hepatic Duct* terminate?
137 How is the *blood* conveyed from the LIVER?
138 Whence does the LIVER derive its *Nerves?*
139 What is *Glisson's Capsule?*

GALL-BLADDER.

140 What is the GALL-BLADDER?
141 Where is the GALL-BLADDER *situated?*
142 What is the *form* of the GALL-BLADDER?
143 Into what parts is the GALL-BLADDER *divided?*

Quest.

144 How is the GALL-BLADDER *situated* when we stand?

145 How many *Coats* does the GALL-BLADDER possess?

146 What is peculiar to the *internal Coat* of the GALL-BLADDER?

147 Has the GALL-BLADDER any direct *connexion* with the Liver?

148 How is the *Neck* of the GALL-BLADDER formed?

149 What is the internal appearance of the *Neck* of the GALL-BLADDER?

150 What is the course of the *Cystic Duct?*

151 What duct is formed by the union of the Cystic and Hepatic Ducts?

152 Where does the *Ductus Communis Choledochus* terminate?

153 What is the course of the BILE?

PANCREAS.

154 What is the PANCREAS?

155 What is the *situation* of the PANCREAS?

156 How is the PANCREAS generally *divided?*

157 With what parts are its *Extremities* connected?

158 Where is that part situated which has been termed the LESSER PANCREAS?

159 Where does the *Duct* of the LESSER PANCREAS terminate?

160 How does the PANCREATIC DUCT arise?

161 What is the *situation* of the PANCREATIC DUCT?

162 Where does the PANCREATIC DUCT *terminate?*

163 What is the *structure* of the PANCREAS?

164 Whence does the PANCREAS derive its *Arteries?*

165 Whither do the *Veins* of the PANCREAS pass?

166 Whence are the *Nerves* of the PANCREAS derived?

SPLEEN.

167 What is the SPLEEN?

168 What is the *situation* of the SPLEEN?

169 What is the *form* of the SPLEEN?

170 Into what parts is the SPLEEN generally *divided?*

171 What is the *structure* of the SPLEEN?

Quest.

172 Whence does the SPLEEN derive its *Blood?*
173 Whither do the Veins of the SPLEEN pass?
174 Whence are the *Nerves* of the SPLEEN derived?
175 What is the *use* of the SPLEEN?

OMENTUM.

176 What is the OMENTUM?
177 What is the *situation* of the OMENTUM?
178 What is the *form* of the OMENTUM?
179 Where is the OMENTUM *attached?*
180 What is the *structure* of the OMENTUM?
181 What is the *situation* of the LITTLE OMENTUM?
182 How does the *Cavity* of the OMENTUM communicate with the ABDOMEN?

KIDNEYS.

183 What are the KIDNEYS?
184 Where are the KIDNEYS *situated?*
185 What difference is there in the *situation* of the RIGHT and LEFT KIDNEY?
186 What is the *form* of the KIDNEY?
187 What *Coats* does the KIDNEY possess?
188 What is the *structure* of the KIDNEY?
189 How may the Cortical and Medullary Substances be distinguished from each other?
190 What is the number of the *Papillæ* of the KIDNEY?
191 What is the *name* of the *Cavities* in which the Papillæ are situated?
192 What is the name of the Cavity in which the *Calices*, or *Infundibula* of the KIDNEY terminate?
193 What is the name of the *Duct* leading from the Pelvis of the KIDNEY?
194 What is the course of the *Ureter?*
195 How many *Coats* does the *Ureter* possess?
196 What is the *structure* of the *Coats* of the Ureter?
197 Whence are the *Arteriès* of the KIDNEYS derived?
198 Whither do the Veins of the KIDNEY pass?
199 Whence are the *Nerves* of the KIDNEY derived?
200 What is the *situation* of the *Ureter* in relation to the Emulgent Artery and Vein?

RENAL GLANDS.

Quest.
201 What are the RENAL GLANDS?
202 What is the *situation* of the RENAL GLANDS?
203 What is the *form* of the RENAL GLANDS?
204 What is the *internal appearance* of the RENAL GLANDS?
205 What is the *form* of the *Cavity* of the RENAL GLANDS?
206 What is *contained* in the *Cavity* of the RENAL GLANDS?
207 Whether are the RENAL GLANDS largest in the *Fœtus* or the *Adult?*

SECTION XXIX.

OF THE PELVIC VISCERA.

1 Of what are the *Pelvic Viscera* generally said to consist?

URINARY BLADDER.

2 What is the URINARY BLADDER?
3 What is the *situation* of the URINARY BLADDER?
4 What is the *form* of the URINARY BLADDER?
5 What parts of the URINARY BLADDER are generally enumerated?
6 Of how many *Coats* does the BLADDER consist?
7 What are the *names* of the *Coats* of the BLADDER?
8 What is the extent of the *Peritoneal Coat?*
9 What is the direction of the fibres of the *Muscular Coat* of the BLADDER?
10 What is the nature of the *Cellular* or *Nervous Coat*, of the BLADDER?
11 What is the *structure* of the *internal Coat* of the BLADDER?
12 How many *Openings* are there into the BLADDER?
13 What is the *anterior Opening?*
14 What is *termed* the *Neck* of the BLADDER?
15 Where do the *Ureters* open into the BLADDER?
16 At what distance are *these openings* from each other?

Quest.

17 Where is the *Urachus* situated?
18 What is the *use* of the *Urachus?*
19 Whence are the *Arteries* of the Bladder derived?
20 Whither do the *Veins* of the Bladder pass?
21 Whence are the *Nerves* of the Bladder derived?

MALE ORGANS OF GENERATION.

22 Of what parts do the Male Organs of Generation consist?

SCROTUM.

23 How is the Scrotum formed?
24 What is the *Raphe?*
25 What is the *Dartos?*
26 What is the *Septum Scroti?*

TESTES.

26* Where are the Testes *situated?*
27 What are the *Coats* of the Testicle?
28 Describe the *Tunica Vaginalis.*
29 What is the *Tunica Albugineæ?*
30 What is the *internal structure* of the Testis?

EPIDIDYMIS.

31 Where is the Epididymis *situated?*
32 What is the *form* of the Epididymis?
33 What is the *course* of the Epididymis?
34 In what does the Epididymis terminate?

VAS DEFERENS.

35 What is the Vas Deferens?
36 Whence does the Vas Deferens *arise?*
37 What is the *course* of the Vas Deferens?

VESICULÆ SEMINALES.

38 What are the Vesiculæ Seminales?
39 Where are the Vesiculæ Seminales *situated?*
40 What is the *structure* of the Vesiculæ Seminales?

Quest.

41 What is the *internal appearance* of the Vesiculæ Seminales?

42 What is the *external Covering* of the Vesiculæ Seminales?

43 What is the nature of their *internal Coat?*

44 How are the Vesiculæ Seminales *connected* with the Vasa Deferentia?

45 Where do the Vesiculæ Seminales *open?*

46 What is the *use* of the Vesiculæ Seminales?

PROSTATE GLAND.

47 What is the Prostate Gland?

48 Where is the Prostate Gland *situated?*

49 What is the *form* of the Prostate Gland?

50 What are the *connexions* of the Prostate Gland with the surrounding parts?

51 What is the *internal structure* of the Prostate Gland?

52 What openings are there from the Follicles of the Prostate into the Urethra?

53 What is the *use* of the Prostate Gland?

ANTIPROSTATÆ.

54 What are the Antiprostatæ?

55 Where are the Antiprostatæ situated?

56 Where do the Ducts of the Antiprostatæ terminate?

57 What is the use of the Antiprostatæ?

VERU-MONTANUM.

58 What is the Veru-Montanum?

59 Where is the Veru-Montanum situated?

60 By what is the Veru-Montanum *perforated?*

PENIS.

61 What are the parts which compose the Penis?

CORPORA CAVERNOSA.

Quest.

62 What are the Corpora Cavernosa?

63 Where are the Corpora Cavernosa *situated?*

64 What *grooves* are formed by the union of the Corpora Cavernosa?

65 What is situated in the *lower groove* between the two Corpora Cavernosa?

66 What is situated in the *upper groove* between the two Corpora Cavernosa?

67 To what are the *ends* of the Corpora Cavernosa joined anteriorly?

67* To what are the roots of the Corpora Cavernosa fixed?

68 What is the *structure* of the Corpora Cavernosa?

69 How are the two Corpora Cavernosa divided?

URETHRA.

70 What is the Urethra?

71 What is the *situation* of the Urethra?

72 What is the *form* of the Urethra?

73 What is the *structure* of the Urethra?

74 What are the *Lacunæ?*

75 In what direction are the *openings* of the *Lacunæ?*

CORPUS SPONGIOSUM.

76 What is the name of the *substance surrounding* the Urethra?

77 Where is the *membranous part* of the Urethra situated?

78 Where is the *Bulb* of the Urethra situated?

79 Where is the *Glans Penis* situated?

80 What *opening* is there in the *Glans Penis?*

81 Where is the *Corona Glandis?*

82 What is the *structure* of the Corpus Spongiosum?

83 What *Arteries* supply the Penis?

84 What is the course of the *Veins* of the Penis?

85 How is *Erection* effected?

INTEGUMENTS OF THE PENIS.

Quest.

86 What are the *Integuments* of the Penis?

87 What is the *Præputium?*

88 What is the *Frænum?*

FEMALE ORGANS OF GENERATION.

89 How are the *parts of Generation in Females* divided?

90 What are the *internal parts of Generation* in the Female?

91 What are the *external parts of Generation* in the Female?

INTERNAL PARTS.

UTERUS.

92 What is the Uterus?

93 What is the *situation* of the Uterus?

94 What is the *form* of the Uterus?

95 Into what parts is the Uterus generally *divided?*

96 What is the *form* of the *Uterine Cavity?*

97 What *Openings* are there into the Cavity of the Uterus?

98 Whither do the *Openings* at the angles of its *Fundus lead?*

99 What is the size of the *Openings* at the superior angles of the Uterus?

100 Whither does the *Opening* of the *inferior angle* of the Uterus lead?

101 What is the *size* of the *Opening* of the inferior angle of the Uterus?

102 What is the *name* generally given to the *opening* of the inferior angle of the Uterus?

103 How is the Cavity of the Uterus *lined?*

104 In what part of the Uterus does the Membrane lining it form *Rugæ?*

Quest.

105 By what small *Foramina* is the *Os Uteri* surrounded?

106 What is the *internal structure* of the UTERUS?

107 By what Membrane is the UTERUS externally *invested?*

108 How are the *broad Ligaments* of the UTERUS formed?

109 What is the *situation* of the *broad Ligaments* of the UTERUS?

110 What are the *Alæ* of the *broad Ligaments* of the UTERUS?

111 What is contained between the *Laminæ* of the *broad Ligaments* of the UTERUS?

112 What are the *round Ligaments* of the UTERUS?

OVARIA.

113 What are the OVARIA?

114 What is the *situation* of the OVARIA?

115 How are the OVARIA *connected* to the Uterus?

116 What is the *internal structure* of the OVARIA?

FALLOPIAN TUBES.

117 What are the FALLOPIAN TUBES?

118 Where are the FALLOPIAN TUBES *situated?*

119 What is the *size* of the *Cavity* of the FALLOPIAN TUBES?

120 How do the FALLOPIAN TUBES *terminate?*

121 What is the *direction* of the greater extremity of the *Fallopian* Tubes?

122 With what are the *greater extremities* of the FALLOPIAN TUBES *connected?*

123 How is the *Cavity* of the FALLOPIAN TUBES lined?

124 What is the *structure* of the FALLOPIAN TUBES?

VAGINA.

125 What is the VAGINA?

126 How is the VAGINA *situated?*

127 Where does the *Os Uteri* project into the VAGINA?

128 To what part of the Uterus is the VAGINA *attached?*

129 With what parts is the VAGINA connected *anteriorly?*

Quest.

130 Where is the VAGINA connected with the Rectum?
131 Where has it a peritoneal covering?
132 What is the *structure* of the VAGINA?

ARTERIES, VEINS, AND NERVES OF THE UTERUS, &c.

133 Whence are the *Arteries* of the Uterus, Fallopian Tubes, and Ovaria derived?
134 Whither do the *Veins* of the Uterus, Fallopian Tubes, and Ovaria pass?
135 Whence are the *Nerves* of the Uterus, Fallopian Tubes, and Ovaria derived?

EXTERNAL PARTS.

PUBIS.

136 What name is given to the External Parts collectively?
137 What is the *situation* of the PUBIS?
138 How is the PUBIS *formed?*

LABIA PUDENDI.

139 What is the *situation* of the LABIA PUDENDI?
140 What are the points in which the LABIA *meet* termed?
141 What is the *structure* of the LABIA?
142 What *name* is given to the part situated between the Inferior Commisure of the LABIA and the Anus?
143 What is the *length* of the *Perinæum?*
144 What parts are seen when the *Labia* are separated?

NYMPHÆ.

145 What are the NYMPHÆ?
146 What is the *situation* of the NYMPHÆ?
147 What is the *shape* of the NYMPHÆ?
148 What is the *structure* of the NYMPHÆ?
149 Which of the *extremities* of the NYMPHÆ is most distant?

CLITORIS.

Quest.

150 What is the Clitoris?

151 What is the *situation* of the Clitoris?

152 By what is the Clitoris *enveloped?*

153 What is the *structure* of the Clitoris?

154 Where are the *Crura* of the Clitoris fixed?

155 What is the *use* of the Clitoris?

URETHRA.

156 What is the *situation* of the Urethra in Females?

157 What appearance have the sides of the *Orifice* of the Urethra?

158 Where are the *Lacunæ* of the Urethra situated?

159 What is the *structure* of the Female Urethra?

160 How is the Female Urethra distinguished from the Male?

THE ORIFICE OF THE VAGINA.

161 What is the *situation* of the *Orifice of the Vagina?*

162 Whether is it narrower than the rest of the Vagina?

163 What is particularly noticed at its under part?

HYMEN.

164 What is the Hymen?

165 What part of the Hymen is pervious?

166 What are the *Carunculæ Myrtiformes?*

167 What is the *use* of the Hymen?

OF THE ORGANS OF THE SENSES.

Quest.

1 What are the ORGANS OF THE SENSES?
2 What are the names of the ORGANS OF THE SENSES?

SECTION XXX.

ORGAN OF VISION.

1 Of what does the ORGAN OF VISION consist?
2 Where are the *Eyes situated?*

ORBITS.

3 What are the ORBITS?
4 Where are the ORBITS *situated?*
5 Of how many *Bones* is the ORBIT of the Eye composed?
6 What are the *names* of the *Bones* which compose the ORBIT?
7 What Bones form its *Ridge* or *Basis?*
8 What Bones form its *Apex?*
9 What Bones form the *sides* of the ORBIT?
10 By what *Foramina* is the ORBIT perforated?
11 In what part of the ORBIT is the *Foramen Opticum* situated?
12 In what part of the ORBIT is the *Sphænoidal Fissure*, or *Foramen Lacerum Orbitale Superius* situated?
13 In what part of the ORBIT is the *Spheno-Maxillary Fissure* situated?
14 Whence is the *Membrane* lining the ORBIT derived?

LACHRYMAL AND EXTERNAL PARTS OF THE EYE.

SUPERCILIA.

15 Where are the SUPERCILIA *situated?*
16 How are the SUPERCILIA *formed?*
17 How are the SUPERCILIA *moved?*

PALPERBRÆ.

Quest.

18 Explain the *situation* of the Palpebræ.
19 Which of the Palpebræ is *largest?*
20 What are the *points*, where the superior and inferior Palpebræ *meet*, denominated?
21 Whether is the *Nasal*, or *Temporal Angle* of the Palpebræ largest?
22 How are the Palpebræ *composed?*

TARSI.

23 What are the Tarsi?
24 Where are the Tarsi *situated?*
25 What is the *form* of the Tarsi?
26 Which of the *Edges* of the Tarsi is thickest?
27 What is formed by the meeting of the *Ciliary Edges* of the Tarsi?
28 What is the appearance of their *inner sides?*

CILIARY GLANDS.

29 What are the Ciliary Glands?
30 Where are the Ciliary Glands *situated?*
31 What is the *form* of the Ciliary Glands?

CILIA.

32 What are the Cilia?
33 Where are the Cilia *situated?*
34 What is the *course* of the Hairs of the Cilia?
35 Where are the Hairs of the Cilia *longest?*

LACHRYMAL APPARATUS.

36 What parts compose the Lachrymal Apparatus?

LACHRYMAL GLAND.

37 Where is the Lachrymal Gland *situated?*
38 What is the *form* of the Lachrymal Gland?
39 What is the *course* of the Lachrymal Ducts?

CARUNCULA LACHRYMALIS.

Quest.
40 What is the CARUNCULA LACHRYMALIS?
41 Where is the CARUNCULA LACHRYMALIS *situated?*
42 What is the *structure* of the CARUNCULA LACHRYMALIS?
43 What is the *use* of the CARUNCULA LACHRYMALIS?
44 Where is the LACUS LACHRYMALIS *situated?*
45 What is the *use* of the LACUS LACHRYMALIS?

PLICA SEMILUNARIS.

46 Where is the PLICA SEMILUNARIS *situated?*
47 What is the *form* of the PLICA SEMILUNARIS?
48 What is the direction of the *Cornua* of the PLICA SEMILUNARIS?
49 What is the *use* of the PLICA SEMILUNARIS?

PUNCTA LACHRYMALIA.

50 What are the PUNCTA LACHRYMALIA?
51 Where are the PUNCTA LACHRYMALIA *situated?*
52 How are the PUNCTA LACHRYMALIA *formed?*
53 What parts of the opposite PUNCTA LACHRYMALIA touch when the Eyelids are closed?
54 What is the *use* of the PUNCTA LACHRYMALIA?

CANALICULI LACHRYMALES.

55 What are the CANALICULI LACHRYMALES?
56 Where are the CANALICULI LACHRYMALES *situated?*
57 What is the *direction* of the CANALICULI LACHRYMALES?

LACHRYMAL SAC.

58 Where is the LACHRYMAL SAC *situated?*
59 By what *Bones* is the LACHRYMAL GROOVE *formed?*
60 What is the *form* of the LACHRYMAL SAC?
61 Where is the LACHRYMAL SAC crossed by the *Tendon* of the Orbicularis Palpebrarum?
62 Into what part of the LACHRYMAL SAC do the Canaliculi Lachrymales open?
63 From what part of the LACHRYMAL SAC does the *Ductus ad Nasum* commence?

DUCTUS AD NASUM.

Quest.

64 Where is the Ductus ad Nasum *situated?*

65 By what Bones is the Ductus ad Nasum surrounded?

66 Where does the Ductus ad Nasum terminate?

67 What is the course of the Tears?

THE GLOBE OF THE EYE.

68 What is the *figure* of the Globe of the Eye?

69 Where does it deviate from a true Spheroid?

70 Of what is the Globe of the Eye composed?

COATS OF THE EYE.

71 How many are the Coats of the Eye, and what are their *names?*

72 How are the Coats of the Eye generally *classed?*

TUNICA CONJUNCTIVA.

73 What is the Tunica Conjunctiva?

74 What is the *situation* of the Tunica Conjunctiva?

75 Into what parts is the Tunica Conjunctiva *divided?*

76 How does the Tunica Conjunctiva *adhere* to the Eye?

77 To what part of the Eye does the Tunica Conjunctiva *adhere most* firmly?

TUNICA SCLEROTICA.

78 What is the Sclerotica?

79 What is the *situation* of the Tunica Sclerotica?

80 What is the *structure* of the Tunica Sclerotica?

81 What part of the Sclerotic Coat is *thickest?*

82 To what part of the *Sclerotic Coat* are the Muscles of the Eye attached?

TUNICA CORNEA.

83 What is the Cornea?

84 How is the Cornea connected with the Sclerotica?

Quest.

85 What is the *form* of the Cornea?

86 What is the *structure* of the Cornea?

TUNICA CHOROIDES.

87 What is the Choroid Coat?

88 What is the *situation* of the Choroid Coat?

89 Where does the Choroid Coat *commence?*

90 Where does the Choroid Coat *terminate?*

91 What is remarkable at the anterior edge of the Choroid Coat?

92 What is the *Nigrum Pigmentum?*

93 What are the Blood Vessels of the Choroid Coat?

IRIS.

94 What is the Iris?

95 What is the *situation* of the Iris?

96 What is the *hole* in the middle of the Iris called?

97 What name has been given to the *posterior side* of the Iris?

98 What is the *structure* of the Iris?

RETINA.

99 Where is the Retina *situated?*

100 Where does the Retina *arise?*

101 Where does the Retina *terminate* anteriorly?

102 At what part of the Retina does the *Optic Nerve* terminate?

103 What occupies the *centre* of the Retina posteriorly?

104 What is the *structure* of the Retina?

105 How is the Retina supplied with Blood?

HUMORS OF THE EYE.

106 Of how many Humors does the Eye consist?

107 What are the *names* of the Humors of the Eye?

AQUEOUS HUMOR.

108 What is the Aqueous Humor?

109 Where is the Aqueous Humor *situated?*

Quest.

110 How are the *chambers* of the Eye formed?
111 Which of the *chambers* of the Eye is *largest?*
112 What is the *use* of the Aqueous Humor?

VITREOUS HUMOR.

113 What is the Vitreous Humor?
114 Where is the Vitreous Humor *situated?*
115 What is the *form* of the Vitreous Humor?
116 By what is the Vitreous Humor *enveloped?*
117 What is the *internal structure* of the Vitreous Humor?

CRYSTALLINE LENS.

118 What is the Crystalline Lens?
119 Where is the Crystalline Lens *situated?*
120 What is the *form* of the Crystalline Lens?
121 By what is the Crystalline Lens *enveloped?*
122 What is the *internal structure* of the Crystalline Lens?

MUSCLES, VESSELS, AND NERVES OF THE EYE.

123 How many *Muscles* belong to the *Ball of the Eye?*
124 Whence are the *Vessels* of the Eye derived?
125 Whence are the *Nerves* of the Eye derived?

USE OF THE PARTS OF THE EYE.

126 What is the *use* of the *Cornea?*
127 What is the *use* of the *Aqueous Humor?*
128 What is the *use* of the *Crystalline Lens?*
129 What is the *use* of the *Vitreous Humor?*
130 What part of the Eye perceives the picture formed by the mechanical arrangement of the other parts?
131 What is the *use* of the *Choroid Coat?*
132 What is the *use* of the *Nigrum Pigmentum?*
133 What is the *use* of the *Iris?*
134 What is the *use* of the *Sclerotic Coat?*

SECTION XXXI.

OF THE ORGAN OF SMELL.

Quest.

1 What is the Organ of Smell?
2 Where is the Organ of Smell *situated?*
3 What is the division of the Organ of Smell?
4 What are the *external parts* of the Nose?
5 What are the *internal parts* forming the Cavity of the Nose?
6 By what Bones is the Nose formed?
7 What are the *soft parts* of the Nose?
8 How are the root and arch of the Nose formed?
9 Of how many *Cartilages* does the inferior part of the external Nose consist?
10 What is the *situation* of the *Cartilages* of the Nose?
11 What is the *form* and *extent* of the *Cavities* of the Nose?

PITUITARY MEMBRANE.

12 How are the *internal Nares lined?*
13 What is the *use* of the Pituitary Membrane?
14 Where is the Pituitary Membrane *thickest?*

SINUSES.

15 What Sinuses open into the *internal Nares?*
16 Where do the frontal Sinuses open into the Nares?
17 Where do the Sphœnoidal Sinuses open into the Nares?
18 Where do the Maxillary Sinuses open into the Nares?

DUCTUS INCISIVI.

19 What are the Ductus Incisivi?
20 Where are the Ductus Incisivi *situated?*
21 What is the *use* of the Ductus Incisivi?

BLOOD VESSELS AND NERVES OF THE NOSE.

22 Whence is the *Nose* supplied with blood?
23 Whence are the Nerves of the Nose derived?

SECTION XXXII.

OF THE ORGAN OF HEARING.

Quest.

1 Where is the ORGAN OF HEARING *situated?*
2 How is the *Ear* generally *divided?*

EXTERNAL EAR.

3 How is the EXTERNAL EAR *composed?*
4 Into what parts is the EXTERNAL EAR *divided?*

PINNA.

5 What is the *situation* of the PINNA?
6 How is the PINNA *formed?*
7 What are the *elevations* on the PINNA?
8 What is the *situation* of the HELIX?
9 What is the *situation* of the ANTIHELIX?
10 What is the *situation* of the TRAGUS?
11 What is the *situation* of the ANTITRAGUS?
12 What are the *depressions* of the PINNA?
13 Where is the FOSSA NAVICULARIS *situated?*
14 Where is the FOSSA INNOMINATA *situated?*
15 Where is the CONCHA *situated?*
16 Where are the *Fissures* in the Cartilage of the PINNA situated?
17 What are the *Ligaments* of the PINNA?
18 What are the *Muscles* of the *external Ear?*
19 What is the name of the *Glands* situated in the Integuments of the PINNA?

LOBULUS.

20 What is the *situation* of the LOBE of the Ear?
21 What is the *structure* of the LOBE of the Ear?

MEATUS AUDITORIUS.

22 What is the *situation* of the MEATUS AUDITORIUS EXTERNUS?
23 What is the *direction* of the MEATUS EXTERNUS?

Quest.

24 What is the general *length* of the MEATUS EXTERNUS?

25 Which of the portions of the MEATUS EXTERNUS is *widest?*

26 What is the form of the *bore* of the MEATUS EXTERNUS?

27 How is the MEATUS EXTERNUS *composed?*

28 Which of the portions of the MEATUS EXTERNUS is *longest?*

29 Where are the *Fissures* in the *Cartilage* of the MEATUS EXTERNUS?

30 What *Glands* are situated in the Cellular Membrane and Integuments lining the MEATUS EXTERNUS?

31 What is the *use* of the *Ceruminous Glands?*

NERVES, ARTERIES, AND VEINS OF THE EXTERNAL EAR.

32 Whence are the *Arteries* of the EXTERNAL EAR derived?

33 Whither do the *Veins* of the EXTERNAL EAR pass?

34 Whence are the *Nerves* of the EXTERNAL EAR derived?

INTERNAL EAR.

35 Into what parts is the INTERNAL EAR *divided?*

MEMBRANA TYMPANI.

36 What is the *situation* of the MEMBRANA TYMPANI?

37 How is the MEMBRANA TYMPANI *fixed?*

38 What is the *direction* of the MEMBRANA TYMPANI?

39 Is the MEMBRANA TYMPANI convex or concave externally?

40 How is the MEMBRANA TYMPANI *composed?*

41 What Bone is *attached* to the inside of the MEMBRANA TYMPANI?

TYMPANUM.

42 Where is the Cavity of the TYMPANUM *situated?*

43 What is the *form* of the Cavity of the TYMPANUM?

Quest.

44 What *openings* are there at the circumference of the TYMPANUM?

45 By what is the Cavity of the TYMPANUM *lined?*

46 What are the *contents* of the Cavity of the TYMPANUM?

EUSTACHIAN TUBE.

47 Where is the EUSTACHIAN TUBE *situated?*

48 Of what parts is the EUSTACHIAN TUBE composed?

49 What is the *situation* of the *bony part* of the EUSTACHIAN TUBE?

50 What is the *situation* of the *Cartilaginous* and *Membranous* parts of the *Eustachian Tube?*

51 Where is the EUSTACHIAN TUBE narrowest?

52 What is the *direction* of the EUSTACHIAN TUBES?

53 By what is the EUSTACHIAN TUBE *lined?*

MASTOID CELLS.

54 Into what part of the Tympanum do the MASTOID CELLS *open?*

55 Where are the MASTOID CELLS *situated?*

56 How are the MASTOID CELLS *lined?*

57 What do the MASTOID CELLS contain?

BONES OF THE EAR.

58 Enumerate the BONES OF THE EAR.

59 What is the *situation* of the BONES OF THE EAR?

60 In what *order* are the BONES OF THE EAR connected?

MALLEUS.

61 What is the *situation* of the MALLEUS?

62 What is the *form* of the MALLEUS?

63 What *Muscles* are attached to the MALLEUS?

INCUS.

64 What is the *situation* of the INCUS?

65 What is the *form* of the INCUS?

OS ORBICULARE.

Quest.

66 What is the *size* of the Os Orbiculare?

67 What is the *situation* of the Os Orbiculare?

68 What is the *form* of the Os Orbiculare?

STAPES.

69 What is the *situation* of the Stapes?

70 What is the *form* of the Stapes?

71 What is *situated* between the legs of the Stapes?

72 How is the *Membrane* fixed between the legs of the Stapes?

73 What *Muscle* is attached to the Stapes?

INNER SIDE OF THE TYMPANUM.

74 What is the *situation* of the *Fenestra Ovalis?*

75 What is fixed in the *Fenestra Ovalis?*

76 What is the *situation* of the *Fenestra Rotunda?*

77 What is the *form* of the *Fenestra Rotunda?*

78 Where is the *Promontory* of the Tympanum *situated?*

79 Where is the hollow bony *pyramid* of the Stapideus *situated?*

80 What direction does the *Fallopian Aqueduct* assume on the inner side of the Cavity of the Tympanum?

81 Where is the elevation of the External Semicircular Canal situated?

LABYRINTH.

82 How is the Labyrinth of the Ear *situated?*

83 Of what parts does the Labyrinth of the Ear consist?

84 What are the *contents* of the *Labyrinth* of the Ear?

VESTIBULUM.

85 What is the *situation* of the Vestibulum?

86 What is the *form* of the Vestibulum?

87 What *opening* is in the *external side* of the Vestibulum?

Quest.

88 What are the *openings* on the *posterior side* of the Vestibulum?

89 What *opening* is at the *anterior side* of the Vestibulum?

90 What is the *direction* of the *Aqueduct* of the Vestibulum?

91 Where is the *external opening* of the *Aqueduct* of the Vestibulum?

SEMICIRCULAR CANALS.

92 What is the *situation* of the SEMICIRCULAR CANALS?

93 What is the *number* of the SEMICIRCULAR CANALS?

94 What are the *names* of the SEMICIRCULAR CANALS?

95 How many *openings* have the SEMICIRCULAR CANALS into the Vestibulum?

96 Why have the *three* SEMICIRCULAR CANALS only *five* openings?

97 What are the *Ampullæ* of the SEMICIRCULAR CANALS?

98 Where are the *Ampullæ* of the superior and posterior *Canals* situated?

99 Where is the *Ampulla* of the external *Canal* situated?

COCHLEA.

100 What is the *situation* of the COCHLEA?

101 What is the *form* of the COCHLEA?

102 How many turns does the *Spiral Canal* of the COCHLEA make?

103 By what is the *Spiral Canal* of the COCHLEA divided into two?

104 What is the name of the two parts into which the Canal of the Cochlea is divided?

105 What is the *relative situation* of the SCALÆ?

106 Where is the *communication* of the SCALÆ situated?

107 What is the *pillar* round which the Cochlea winds, denominated?

108 What is the *Infundibulum?*

109 What is the *situation* of the *Lamina Spiralis?*

110 By what does the *Lamina Spiralis terminate?*

Quest.

111 How do the Filaments of the Portio Mollis pass into the Scalæ?

112 Where are the branches of the Portio Mollis chiefly ramified?

MEATUS AUDITORIUS INTERNUS.

113 Where is the MEATUS AUDITORIUS INTERNUS *situated?*

114 What is the *form* of the MEATUS AUDITORIUS INTERNUS?

115 How are the *Fossulæ* distinguished at the bottom of the MEATUS INTERNUS?

116 By what are the *Fossulæ* of the MEATUS INTERNUS divided from each other?

117 What are the *contents* of the MEATUS AUDITORIUS INTERNUS?

118 Where does the *Fallopian Aqueduct* commence?

119 What is the *course* of the *Fallopian Aqueduct?*

120 Where does the *Fallopian Aqueduct terminate?*

121 What *passes* through the *Fallopian Aqueduct?*

122 By what Nerve is the *Portio Dura* joined in the Fallopian Aqueduct?

123 Where is the *Portio Dura* joined by the *Vidian Nerve?*

124 Where is the *Portio Dura* joined by the *Chorda Tympani?*

125 What is the *course* of the *Chorda Tympani?*

126 How is the *Portio Mollis* distributed?

USE OF THE PARTS OF THE EAR.

127 What is the *use* of the Pinna?

128 What is the *use* of the Meatus Auditorius Externus?

129 What is the *use* of the Membrana Tympani?

130 What is the *use* of the Muscles of the Internal Ear?

131 What is the *use* of the Eustachian Tube?

132 What is the *use* of the Ossicula Auditus?

133 What is the *use* of the Water in the Labyrinth?

134 What part is the immediate Organ of Hearing, i. e. that which perceives the impressions of sound?

SECTION XXXIII.

OF THE MOUTH, AND ORGAN OF TASTE.

Quest.

1 What is meant by the MOUTH?

2 What *Bones* contribute to the formation of the MOUTH?

3 How is the MOUTH generally *divided?*

EXTERNAL PARTS OF THE MOUTH.

4 What are the *external parts* of the MOUTH?

5 How are the *Cheeks* and *Lips* formed?

6 What is the appearance of the Edges of the *Lips?*

7 What are the *Commissures* of the Lips?

8 What is the *Fossula* of the Upper Lip?

9 What are the *Fræna* of the Lips?

INTERNAL PARTS OF THE MOUTH.

10 What are the internal parts of the MOUTH?

GUMS.

11 What is the *situation* of the GUMS?

12 What is the *structure* of the substance of the GUMS?

13 By what means do the GUMS *adhere* to the Alveolar Processes?

14 By what Membrane are the GUMS *invested?*

PALATE.

15 What is the *situation* of the PALATE?

16 What is the *form* of the PALATE?

17 Into what *parts* is the PALATE divided?

18 Whether is the *hard* or *soft* part of the PALATE situated most anteriorly?

19 By what *Membrane* is the PALATE covered?

20 How is the soft portion of the PALATE formed?

21 What is the shape of the Velum Pendulum Palati?

22 To what part of the Velum Palati is the Uvula attached?

23 What is the shape of the Uvula?

24 What is the structure of the Uvula?

Quest.

25 What are the *arches* of the PALATE on each side of the Uvula?

26 In what *direction* do the two *arches* on each side proceed from the Uvula?

27 What is situated between the anterior and posterior arch of the PALATE on each side?

TONGUE.

28 Into what parts is the TONGUE *divided?*

29 Of what is the TONGUE *composed?*

30 By what Membrane is the TONGUE *invested?*

31 What are the *Papillæ* of the TONGUE?

32 How many *kinds* of *Papillæ* are observable upon the TONGUE?

33 Where are the *Papillæ Capitatæ* situated?

34 What is the *form* of the Papillæ Capitatæ?

35 What is the *use* of the Papillæ Capitatæ?

36 Where are the Papillæ *Semilenticulares* situated?

37 What is the *form* of the Papillæ Semilenticulares?

38 Where are the *Papillæ Velosæ?*

39 What is the *form* of the Papillæ Velosæ?

SALIVAL GLANDS.

40 Enumerate the SALIVAL GLANDS.

41 What other Glands contribute to augment the juices of the Mouth?

PAROTID GLANDS.

42 Where are the PAROTID GLANDS situated?

43 From what part of the PAROTID GLAND does its Duct proceed?

44 What is the *course* of the PAROTID DUCT?

45 Where does the *Parotid Duct open* into the Mouth?

SUB-MAXILLARY GLANDS.

46 Where are the MAXILLARY GLANDS *situated?*

47 From what part of the MAXILLARY GLAND does its *Duct* proceed?

48 What is the *course* of the *Maxillary Duct?*

49 Where does the *Maxillary Duct open* into the Mouth?

SUBLINGUAL GLANDS.

Quest.
50 Where are the SUBLINGUAL GLANDS *situated?*
51 Where do the Ducts of the SUBLINGUAL GLANDS *terminate?*

AMYGDALÆ.

52 Where are the AMYGDALÆ *situated?*
53 What is the *form* of the AMYGDALÆ?
54 What is the *structure* of the AMYGDALÆ?
55 What is the *use* of the AMYGDALÆ?

THYROID GLAND.

56 Where is the THYROID GLAND situated?
57 What is the *form* of the THYROID GLAND?
58 What is the *use* of the THYROID GLAND?

SECTION XXXIV.

OF THE SKIN, AND OF THE ORGAN OF TOUCH.

1 Of what parts do the INTEGUMENTS *consist?*
2 What is the relative situation of the *Cuticle*, *Rete Mucosum*, and *Cutis?*

CUTIS.

3 What is the *structure* of the CUTIS?
4 On what parts of the Body is the CUTIS *thickest?*
5 What are the *Papillæ* of the Skin?
6 On what parts of the Body are the *Papillæ* most prominent?
7 In what *form* are the *Papillæ* arranged in the Palms of the Hands and Soles of the Feet?
8 What is the *form* of the *Papillæ* of the red part of the Lips?
9 Where is the *Sense of Touch* most acute?
10 Where are the *Sebaceous Follicles* situated?
11 Where are the *Sebaceous Follicles* most conspicuous?
12 What is the use of the *Sebaceous Follicles?*
13 What are the lesser *openings* in the CUTIS?

RETE MUCOSUM.

Quest.
14 Where is the Rete Mucosum *situated?*
15 What is the *color* of the Rete Mucosum?

CUTICLE.

16 Where is the Cuticle *situated?*
17 On what parts of the Body is the Cuticle *thickest?*
18 What openings are there in the Cuticle?
19 What is the *structure* of the Cuticle?

ADIPOSE SUBSTANCE.

20 Where is the Adipose Substance *situated?*
21 What parts of the Skin are free from Adipose Substance?
22 What is the *structure* of the Adipose Substance?
23 Where is its distinct *cellular structure* most remarkable?
24 What is the *use* of the Adipose Substance?

NAILS.

25 Of what are the Nails a continuation?
26 How are the Nails connected to the Cutis?
27 How are the Nails connected to the Cuticle?
28 What is the *structure* of the Nails?
29 How are the Nails formed?

HAIRS.

30 Where are the *Bulbs* of the Hair situated?
31 What is the *structure* of the Bulbs of the Hair?
32 How do the Hairs pass from the Cutis?
33 What is the Structure of the Hair?

SECTION XXXV.

OF THE BRAIN IN GENERAL, AND OF ITS MEMBRANES.

Quest.

1 Where is the Brain *situated?*

2 Into what portions is the Brain *divided?*

3 By what *Membrane* is the Brain enveloped?

DURA MATER.

4 What is the *situation* of the Dura Mater?

5 How is the Dura Mater *composed?*

6 What are the *adhesions* of the external layer of the Dura Mater?

7 How does the *internal* differ from the *external layer* of the Dura Mater?

8 How are the *processes* of the Dura Mater formed?

9 What are the chief *processes* of the Dura Mater?

10 What are the *Sinuses* of the Dura Mater?

FALX.

11 What is the *situation* of the Falx Cerebri?

12 Where is the Falx Cerebri *broadest?*

13 What portions of the Brain does the Falx Cerebri separate?

TENTORIUM.

14 What is the *situation* of the Tentorium?

15 Where is the Tentorium *broadest?*

16 What portions of the Brain does the Tentorium *separate?*

17 What is the form of the *Aperture* left by the Tentorium between the Cavity of the Cerebrum and that of the Cerebellum?

FALX CEREBELLI.

18 Where is the Falx Cerebelli *situated?*

19 What portions of the Brain does the Falx Cerebelli *separate?*

SPHŒNOIDAL FOLDS.

Quest.

20 Enumerate the Sphœnoidal Folds of the Dura Mater.

21 What are the *uses* of the Sphœnoidal Folds?

ELONGATIONS OF THE DURA MATER.

22 What are the *Elongations* of the Dura Mater?

23 Which are the chief *Elongations* of the Dura Mater?

SINUSES OF THE DURA MATER.

24 What are the Sinuses of the Dura Mater?

25 How are the Sinuses of the Dura Mater *formed?*

26 What are the chief *Veins*, or Sinuses, of the Dura Mater?*

ARTERIES AND NERVES OF THE DURA MATER.

27 How are the Arteries of the Dura Mater *distinguished?*

28 Whence are the *anterior* Arteries of the Dura Mater *derived?*

29 Whence are the *middle* Arteries of the Dura Mater *derived?*

30 Whence are the *posterior* Arteries of the Dura Mater *derived?*

31 Whence are the Nerves of the Dura Mater *derived?*

PIA MATER.

32 Where is the Pia Mater *situated?*

33 How is the Pia Mater *composed?*

34 What name is given to its *external layer?*

35 How is the *external layer* of the Pia Mater, or Tunica Arachnoides, expanded over the Brain?

36 How is the *internal layer* of the Pia Mater *distributed?*

37 Which of the layers of the Pia Mater is the most *Vascular?*

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* The Sinuses of the Dura Mater are described in their proper place, along with the other Veins.

SECTION XXXVI.

OF THE CEREBRUM.

Quest.

1 In what part of the Cavity of the *Cranium* is the CEREBRUM *situated?*

2 What is the *form* of the CEREBRUM?

3 How is the CEREBRUM *divided?*

4 Where are the *anterior lobes* of the CEREBRUM *situated?*

5 Where are the *middle lobes* of the CEREBRUM *situated?*

6 Where are the *posterior lobes* of the CEREBRUM *situated?*

7 How are the *anterior* and *middle lobes* of the CEREBRUM *divided?*

8 What is the appearance of the *surface* of the CEREBRUM?

9 What are the Anfractuosities of the *Brain?*

10 Of what *Substances* does the Cerebral Mass consist?

11 What is the situation of the *Cortical*, or *Cinereous Substance?*

12 What is the *color* of the *Medullary Substance?*

13 What is the *situation* of the *Medullary Substance?*

CORPUS CALLOSUM.

14 Where is the CORPUS CALLOSUM *situated?*

15 By what Membrane is the surface of the CORPUS CALLOSUM *covered?*

16 What is seen on the *surface* of the CORPUS CALLOSUM?

17 What does the CORPUS CALLOSUM *join* on each side?

18 What names are given to the *Medullary Substance* of both Hemispheres, together with the CORPUS CALLOSUM?

LATERAL VENTRICLES.

19 Where are the LATERAL VENTRICLES *situated?*

20 What is the *form* of the LATERAL VENTRICLES?

Quest.

21 What divides the LATERAL VENTRICLES from each other?

22 To what bodies is the *Septum Lucidum* connected?

23 How is the *Septum Lucidum composed?*

24 What is the name of the *Cavity* situated between the laminæ of the *Septum Lucidum?*

FORNIX.

25 What is the *situation* of the FORNIX?

26 What is the *form* of the FORNIX?

27 What are the connexions of the FORNIX?

28 What are the continuations of the *angles* of the FORNIX called?

29 What names do the *posterior pillars* of the FORNIX assume in the lower part of the Lateral Ventricles?

30 How do the *anterior pillars* of the FORNIX *terminate?*

31 What is the appearance of the *inferior surface* of the FORNIX?

32 What name has been given to the *lines* on the *inferior surface* of the FORNIX?

CHOROID PLEXUS.

33 What are the PLEXUS CHOROIDES?

34 What is the *situation* of the CHOROID PLEXUS in the lateral Ventricles?

35 How is the CHOROID PLEXUS *composed?*

36 What *parts* are exposed by the removal of the Fornix and Choroid Plexus?

CORPORA STRIATA.

37 What is the *situation* of the CORPORA STRIATA?

38 What is the *form* of the CORPORA STRIATA?

39 What parts of the CORPORA STRIATA are nearest each other?

40 What is the *internal structure* of the CORPORA STRIATA?

THALAMI NERVORUM OPTICORUM.

Quest.

41 What is the *situation* of the THALAMI NERVORUM OPTICORUM?

42 What is the *figure* of the THALAMI NERVORUM OPTICORUM?

43 How are the THALAMI NERVORUM OPTICORUM *connected?*

44 What is the *Tenia Semicircularis?*

45 What is the *internal structure* of the THALAMI NERVORUM OPTICORUM?

PEDES HYPPOCAMPI.

46 What are the PEDES HYPPOCAMPI?

47 Where are the PEDES HYPPOCAMPI *situated?*

48 What is the *course* of the PEDES HYPPOCAMPI?

49 What is remarkable on the *inner edges* of the PEDES HYPPOCAMPI?

50 How do the PEDES HYPPOCAMPI terminate?

51 Of what are the PEDES HYPPOCAMPI *composed?*

HYPPOCAMPUS MINOR.

52 Where is the HYPPOCAMPUS MINOR *situated?*

53 What is the *form* of the HYPPOCAMPUS MINOR?

54 With what is the HYPPOCAMPUS MINOR *connected?*

PINEAL GLAND.

55 Where is the PINEAL GLAND *situated?*

56 What is the *form* of the PINEAL GLAND?

57 How is the PINEAL GLAND *connected?*

58 What is the *internal structure* of the PINEAL GLAND?

59 What is situated *below* the PINEAL GLAND?

60 What is the *posterior Commissure* of the Cerebrum?

TUBERCULA QUADRIGEMINA.

61 Where are the TUBERCULA QUADRIGEMINA *situated?*

62 What is the *form* of the TUBERCULA QUADRIGEMINA?

Quest.

63 What is the *structure* of the TUBERCULA QUADRIGEMINA?

APERTURES IN THE LATERAL VENTRICLES.

64 What is the FORAMEN OF MONRO?
65 Where is the FORAMEN OF MONRO *situated?*
66 What is the FORAMEN COMMUNE ANTERIUS?
67 Where is the FORAMEN COMMUNE ANTERIUS *situated?*
68 What is the FORAMEN COMMUNE POSTERIUS?
69 Where is the FORAMEN COMMUNE POSTERIUS *situated?*

THIRD VENTRICLE.

70 Where is the THIRD VENTRICLE situated?
71 From what part of the THIRD VENTRICLE does the Infundibulum proceed?
72 What is the *Infundibulum?*
73 From what part of the THIRD VENTRICLE does the *Iter-a-tertio-ad-quartum-ventriculum* proceed?
74 Where does the *Iter-a-tertio-ad-quartum-ventriculum* terminate?

PITUITARY GLAND.

75 Where is the PITUITARY GLAND *situated?*
76 What is the *form* of the PITUITARY GLAND?
77 What is the *structure* of the PITUITARY GLAND?

SECTION XXXVII.

OF THE CEREBELLUM.

1 Where is the CEREBELLUM *situated?*
2 What is the *general form* of the CEREBELLUM?
3 How is the CEREBELLUM *divided?*
4 What is the superficial *appearance* of the CEREBELLUM?
5 What is the *structure* of the CEREBELLUM?
6 What is the appearance called *Arbor Vitæ?*

Quest.

7 What are the *external eminences* of the CEREBELLUM denominated?

8 Where are the *Appendices Vermiformes* of the CEREBELLUM *situated?*

FOURTH VENTRICLE.

9 Where is the FOURTH VENTRICLE *situated?*

10 With what canal is the FOURTH VENTRICLE anteriorly *connected?*

11 Where is the *Valvula-Vieusenii* situated?

12 Where is the *Calamus Scriptorius* situated?

13 Whence proceed the *Crura Cerebelli?*

SECTION XXXVIII.

OF THE MEDULLA OBLONGATA.

1 Where is the MEDULLA OBLONGATA *situated?*

2 How is the MEDULLA OBLONGATA *composed?*

3 What are the *Crura Cerebri* and *Cerebelli?*

4 How does the MEDULLA OBLONGATA *terminate* posteriorly?

PONS VAROLII.

5 Where is the PONS VAROLII *situated?*

6 What is the *figure* of the PONS VAROLII?

7 What is the *superficial appearance* of the PONS VAROLII?

CORPORA OLIVARIA AND CORPORA PYRAMIDALIA.

8 What other *eminences* are there on the MEDULLA OBLONGATA?

9 Where are the CORPORA PYRAMIDALIA *situated?*

10 Where are the CORPORA OLIVARIA *situated?*

CORPORA MAMMILARIA.

11 Where are the CORPORA MAMMILARIA situated?

12 What relation do the CORPORA MAMMILARIA bear to the Anterior Pillar of the Fornix?

SECTION XXXIX.

OF THE MEDULLA SPINALIS.

Quest.

1 Whence may the Medulla Spinalis be said to arise?

2 What is the *situation* of the Medulla Spinalis?

3 By what Membranes is the Medulla Spinalis *invested?*

4 What is the *form* of the Spinal Marrow?

5 What is the internal structure of the Spinal Marrow?

6 Where does the Spinal Marrow *terminate?*

ANGEOLOGY.

SECTION XL.

OF THE ARTERIES IN GENERAL.

1 What are the Arteries?

2 How are the Arteries *distinguished* from the Veins?

3 How do the Arteries begin at the Heart?

4 What angles do the *Branches* form with their *Trunks?*

5 How do the Arteries *terminate?*

6 What is the structure of the Arteries?

OF THE PULMONARY ARTERY.

7 From what part of the Heart does the Pulmonary Artery *arise?*

8 What is the *course* of the Pulmonary Artery?

9 How is the Pulmonary Artery *divided?*

10 How are the *right* and *left* Pulmonary Arteries *distributed?*

11 How does the *course* of the *right* Pulmonary Artery differ from that of the *left?*

12 Whether is the *right* or *left* Pulmonary Artery the *longest?*

13 How do the Pulmonary Arteries *terminate* in the Lungs?

OF THE AORTA.

Quest.

14 From what part of the Heart does the Aorta *arise?*
15 Opposite to what Vertebra does the Aorta *arise?*
16 What is the general *course* of the Aorta?
17 What are the general *divisions* of the Aorta?
18 What *parts* of the body are *supplied* with Blood from each of its *divisions?*
19 What are the capital branches of the Aorta?
20 What are the *smaller branches* of the Aorta?
21 Which of the branches of the Aorta *arise* in pairs, and which of them *singly?*
22 What are the first Arteries given off by the Aorta?
23 What are the names of the *Branches* given from the *Arch* of the Aorta?
24 What is the general *course* of the *Carotid Arteries?*
25 How are the *Carotid Arteries divided?*
26 How is the *External Carotid* Artery *distributed?*
27 How is the *Internal Carotid* Artery *distributed?*
28 Whither do the *Subclavian Arteries* pass?
29 Where do the *Subclavian* Arteries *terminate?*
30 What *name* do they assume in passing from the Thorax?
31 What Arteries are given off from the *Thoracic Portion* of the descending Aorta?
32 What Arteries are given off from the *abdominal Portion* of the descending Aorta?
33 Whither do the *Phrenic* Arteries pass?
34 Whither does the *Cardiac* Artery pass?
35 Whither does the *superior Mesenteric* Artery pass?
36 Whither do the *Emulgent* Arteries pass?
37 Whither do the *Spermatic* Arteries pass?
38 Whither does the *inferior Mesenteric* Artery pass?
39 Whither do the *Lumbar* Arteries pass?
40 Whither does the *Arteria Sacra Media* pass?
41 How does the Aorta *terminate?*
42 Whither do the *Iliac Arteries* pass?
43 How are the *Iliac* Arteries *divided?*
44 Whither does the *internal Iliac* Artery pass?
45 Whither does the *external Iliac* Artery pass?
46 Where does the *external Iliac* Artery *terminate?*
47 What name does the *external Iliac* Artery assume on passing from the Abdomen?

SECTION XLI.

OF THE ARTERIES OF THE HEART.

Quest.

1 What is the *number* of the Coronary Arteries?
2 Where do the Coronary Arteries *arise?*
3 What is the *course* of the *right Coronary Artery?*
4 What is the *course* of the *left Coronary Artery?*

SECTION XLII.

OF THE ARTERIES OF THE HEAD.

1 What is the *number* of the Cartoid Arteries?
2 Where do the Carotid Arteries *arise?*
3 What is the *course* of the Carotid Arteries?
4 How are the Carotid Arteries *divided?*
5 What is the *relative situation* of the *external* and *internal* Carotid Arteries?

EXTERNAL CAROTID ARTERY.

6 What is the general *course* of the External Carotid?
7 How many *Branches* proceed from the External Carotid?
8 What are the names of the *Branches* of the External Carotid?
9 Where does the Superior Thyroideal Artery arise?
10 What is the *course* and *distribution* of the Superior Thyroideal Artery?
11 Where does the Lingual Artery *arise?*
12 What is the course and distribution of the Lingual Artery?
13 Where does the External Maxillary Artery *arise?*
14 What is the *course* and *distribution* of the External Maxillary Artery?
15 Where does the Ascending Pharyngeal Artery *arise?*
16 What is the *course* and *distribution* of the Ascending Pharyngeal?

Quest.

17 Where does the OCCIPITAL Artery *arise?*

18 What is the *course* and *distribution* of the OCCIPITAL Artery?

19 Where does the POSTERIOR AURIS *arise?*

20 What is the *course* and *distribution* of the POSTERIOR AURIS?

21 Where does the TRANSVERSE FACIAL *arise?*

22 What is the *course* and *distribution* of the TRANSVERSE FACIAL?

23 Where does the TEMPORAL Artery *arise?*

24 What is the *course* and *distribution* of the TEMPORAL Artery?

25 Where does the INTERNAL MAXILLARY Artery *arise?*

26 What is the *course* and *distribution* of the INTERNAL MAXILLARY Artery?

INTERNAL CAROTID ARTERY.

27 What is the *general course* of the INTERNAL CAROTID Artery?

28 Enumerate the Branches of the Internal Carotid.

29 How is the Arteria POSTERIOR CEREBRI of the Internal Carotid distributed?

30 How is the Arteria MEDEA CEREBRI of the Internal Carotid distributed?*

SECTION XLIII.

ARTERIES OF THE UPPER EXTREMITIES.

SUBCLAVIAN ARTERIES.

1 What is the *number* of the SUBCLAVIAN Arteries?

2 Where do the SUBCLAVIAN Arteries *arise?*

3 In what *direction* do the SUBCLAVIAN Arteries run?

4 Where do the SUBCLAVIAN Arteries change their name?

5 Which of the SUBCLAVIAN Arteries is *shortest* and runs most obliquely?

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* The Vertebral Arteries are described as branches of the Subclavian

Quest.

6 Enumerate the *Branches* of the SUBCLAVIAN Artery.

7 Where does the VERTEBRAL Artery *arise?*

8 What is the *course* and *distribution* of the VERTEBRAL Artery?

9 What is the *Circulus Arteriosus?*

10 Where does the INTERNAL MAMMARY Artery *arise?*

11 What is the *course* and *distribution* of the INTERNAL MAMMARY Artery?

12 Where does the CERVICAL Artery *arise?*

13 What is the *course* and *distribution* of the CERVICAL Artery?

14 Where does the SUPERIOR INTERCOSTAL Artery *arise?*

15 What is the *course* and *distribution* of the SUPERIOR INTERCOSTAL Artery?

16 Where does the INFERIOR THYROIDEAL Artery *arise?*

17 What is the *course* and *distribution* of the INFERIOR THYROIDEAL Artery?

18 Where does the SUPRA-SCAPULAR Artery *arise?*

19 What is the *course* and *distribution* of the SUPRA-SCAPULAR Artery?

AXILLARY ARTERIES.

20 Where do the AXILLARY ARTERIES *commence?*

21 Where do the AXILLARY ARTERIES *terminate?*

22 Enumerate the *Branches* of the AXILLARY ARTERY.

23 How many EXTERNAL MAMMARY Arteries are there?

24 Where does the SUPERIOR MAMMARY Artery *arise?*

25 What is the *course* and *distribution* of the SUPERIOR MAMMARY?

26 Where does the INFERIOR MAMMARY Artery arise?

27 What is the *course* and *distribution* of the INFERIOR MAMMARY Artery?

28 Where does the INFRA-SCAPULAR Artery arise?

29 What is the *course* and *distribution* of the INFRA-SCAPULAR Artery?

30 What is the *course* and *distribution* of the ANTERIOR CIRCUMFLEX Artery?

31 Where does the POSTERIOR CIRCUMFLEX Artery arise?

Quest.

32 What is the *course* and *distribution* of the POSTERIOR CIRCUMFLEX Artery?

33 Where does the BRACHIAL Artery *commence?*

34 What is the *course* of the BRACHIAL Artery?

35 What *Branches* are given off by the BRACHIAL Artery above the bend of the Arm?

36 What is the *situation* of the BRACHIAL Artery in the bend of the Arm?

37 How does the BRACHIAL Artery *terminate?*

38 What is the general *course* of the ULNAR Artery?

39 What are the chief *Branches* given off by the ULNAR Artery before it reaches the Wrist?

40 What is the *course* and *distribution* of the *Ulnar Recurrent?*

41 Where is the ANTERIOR INTERROSSEOUS Artery given off?

42 What is the *course* and *distribution* of the ANTERIOR INTEROSSEOUS Artery?

43 Where is the POSTERIOR INTEROSSEOUS Artery given off?

44 What is the *course* and *distribution* of the POSTERIOR INTEROSSEOUS Artery?

45 What is the *course* of the SUPERFICIAL PALMAR ARCH?

46 What *Branches* are given off from the SUPERFICIAL PALMAR ARCH?

47 What is the *course* and *distribution* of the ULNARIS PROFUNDA?

48 What is the *course* and *distribution* of the DIGITAL ARTERIES?

49 How does the SUPERFICIAL PALMAR ARCH *terminate?*

50 What is the general *course* of the RADIAL Artery?

51 What *Branches* are given off by the RADIAL before it reaches the Wrist?

52 What *Branches* does the RADIAL Artery give off at the *Wrist?*

53 How does the RADIAL Artery form the deep *Palmar Arch?*

54 What is the *course* of the ARCUS PROFUNDUS?

55 What *Branches* are given off from the DEEP PALMAR ARCH?

SECTION XLIV.

OF THE THORACIC ARTERIES.

Quest.

1 Enumerate the Arteries arising from the Superior Portion of the descending Aorta.

2 Where do the Bronchial Arteries *arise?*

3 What is the *course* and *distribution* of the Bronchial Arteries?

4 Where do the Œsophageal Arteries arise?

5 Where do the Intercostal Arteries arise?

6 What is the *course* and *distribution* of the Intercostal Arteries?

SECTION XLV.

OF THE ABDOMINAL ARTERIES.

1 Enumerate the *Arteries* given off from the *Inferior Portion* of the descending Aorta?

2 Where do the Phrenic Arteries arise?

3 What is the *course* and *distribution* of the Phrenic Arteries?

4 Where does the Cæliac Artery *arise?*

5 What are the chief *Branches* of the Cæliac Artery?

6 What is the *course* and *distribution* of the Coronary Artery of the Stomach?

7 What is the *course* and *distribution* of the Hepatic Artery?

8 What is the *course* and *distribution* of the Splenic Artery?

9 Where does the Superior Mesenteric Artery *arise?*

10 What is the *course* and *distribution* of the Superior Mesenteric Artery?

11 Where does the Inferior Mesenteric Artery *arise?*

12 What is the *course* and *distribution* of the Inferior Mesenteric Artery?

13 Where do the Emulgent Arteries *arise?*

14 What is the *course* and *distribution* of the Emulgent Arteries?

Quest.

15 Where do the Capsular Arteries *arise?*

16 What is the *course* and *distribution* of the Capsular Arteries?

17 Where do the Spermatic Arteries *arise?*

18 What is the *course* and *distribution* of the Spermatic Arteries?

19 Where do the Lumbar Arteries *arise?*

20 What is the *course* and *distribution* of the Lumbar Arteries?

21 Where does the Sacral Artery *arise?*

22 What is the *course* and *distribution* of the Sacral Artery?

SECTION XLVI.

OF THE PELVIC ARTERIES.

1 What Arteries proceed from the *termination* of the Aorta?

2 What is the *course* of the right Iliac Artery?

3 What is the *course* of the left Iliac Artery?

4 How are the Iliac Arteries *divided?*

5 What is the *course* of the Trunk of the Internal Iliac?

6 What are the chief *Branches* given off from the Internal Iliac?

7 Where does the lesser Iliac Artery arise?

8 What is the *course* and *distribution* of the lesser Iliac Artery?

9 Where does the Glutæal Artery *arise?*

10 What is the *course* and *distribution* of the Glutæal Artery?

11 Where does the Sciatic Artery *arise?*

12 What is the *course* and *distribution* of the Sciatic Artery?

13 Where does the Pudic Artery *arise?*

14 What is the *course* and *distribution* of the Pudic Artery?

15 Where does the Obturator Artery *arise?*

16 What is the *course* and *distribution* of the Obturator Artery?

Quest.

17 Where does the UMBILICAL Artery *arise?*

18 What is the *course* and *distribution* of the UMBILICAL Artery?

19 What is the *course* of the EXTERNAL ILIAC Artery?

20 What *Branches* are given off from the EXTERNAL ILIAC Artery?

21 Where does the EPIGASTRIC Artery *arise?*

22 What is the *course* and *distribution* of the EPIGASTRIC Artery?

23 Where does the CIRCUMFLEXA ILII arise?

24 What is the *course* and *distribution* of the CIRCUMFLEXA ILII?

SECTION XLVII.

OF THE ARTERIES OF THE LOWER EXTREMITIES.

1 Where does the FEMORAL Artery *commence?*

2 What is the *course* of the FEMORAL Artery?

3 What *Branches* are given off by the FEMORAL Artery in the Groin?

4 Where does the PROFUNDA FEMORIS *arise?*

5 What is the *course* and *distribution* of the PROFUNDA?

6 What name does the FEMORAL Artery assume in the *Ham?*

7 What *Branches* are given off from the POPLITEAL Artery?

8 How does the POPLITEAL Artery *terminate?*

9 What is the *course* of the ANTERIOR TIBIAL Artery?

10 How is the ANTERIOR TIBIAL Artery *distributed?*

11 What is the *course* of the POSTERIOR TIBIAL Artery?

12 How is the POSTERIOR TIBIAL Artery *distributed?*

13 What is the *course* and *distribution* of the EXTERNAL PLANTAR Artery?

14 What is the *course* and *distribution* of the INTERNAL PLANTAR Artery?

15 What is the *course* and *distribution* of the FIBULAR Artery?

SECTION XLVIII.

OF THE VEINS IN GENERAL.

Quest.

1 What are the VEINS?

2 How may the VEINS be *distinguished* from the Arteries?

3 Where do the VEINS begin?

4 How are the VEINS *distributed?*

5 What proportion do the VEINS bear to the Arteries?

6 What is the *structure* of the VEINS?

7 What are the *Valves* of the VEINS?

8 How are the *Valves* disposed?

9 What Veins are without *Valves?*

10 What is the *use* of the *Valves?*

11 How many principal *Venal Trunks* are there?

12 Enumerate the *Venal Trunks.*

13 What are the VEINS peculiar to the *Heart?*

SECTION XLIX.

THE SUPERIOR CAVA.

1 Where does the SUPERIOR CAVA *arise?*

2 How does the SUPERIOR CAVA *terminate?*

3 What Veins does the SUPERIOR CAVA receive?

4 What is the VENA AZYGOS?

5 What is the course of the VENA AZYGOS?

6 What Veins does the RIGHT SUBCLAVIAN receive?

7 What is peculiar to the LEFT SUBCLAVIAN?

8 What is the AXILLARY VEIN?

SECTION L.

OF THE VEINS OF THE HEAD AND NECK.

1 How is the EXTERNAL JUGULAR Vein *formed?*

2 Where does the EXTERNAL JUGULAR Vein *terminate?*

3 How is the INTERNAL JUGULAR Vein *formed?*

4 What are the chief SINUSES of the Dura Mater?

5 Where is the CAVERNOUS SINUS *situated?*

Quest.

6 Whence does the CAVERNOUS SINUS receive its blood?

7 Where is the CIRCULAR SINUS *situated?*

8 Where are the SUPERIOR PETROSAL SINUSES *situated?*

9 Whence do the SUPERIOR PETROSAL SINUSES receive their blood?

10 Where is the INFERIOR PETROSAL SINUS *situated?*

11 Whence does the INFERIOR PETROSAL SINUS receive its blood?

12 Where is the OCCIPITAL SINUS *situated?*

13 Whence does the OCCIPITAL SINUS receive its blood?

14 Where is the INFERIOR LONGITUDINAL SINUS *situated?*

15 Where is the TORCULAR HEROPHILI *situated?*

16 Whence does the TORCULAR HEROPHILI receive its blood?

17 Where is the SUPERIOR LONGITUDINAL SINUS *situated?*

18 Where are the LATERAL SINUSES *situated?*

19 Whence do the LATERAL SINUSES receive their blood?

20 Where do the LATERAL SINUSES receive the name of *Internal Jugular* Veins?

21 What is the *course* of the INTERNAL JUGULAR Veins?

22 Where do the INTERNAL JUGULAR Veins *terminate?*

23 What is the *course* of the VERTEBRAL VEIN?

24 Whence does the VERTEBRAL VEIN receive its blood?

25 Where does the VERTEBRAL VEIN *terminate?*

SECTION LI.

OF THE VEINS OF THE UPPER EXTREMITIES.

1 How are the VEINS OF THE EXTREMITIES classed?

2 What is the *situation* of the *Deep-seated Veins?*

3 What are the *names* of the *Deep-seated Veins* of the upper Extremities?

4 What is the *situation* of the *Superficial Veins?*

Quest.

5 What are the *names* of the *Superficial Veins* of the upper Extremities?

6 What is the *situation* of the CEPHALIC VEIN?

7 What *branches* does the CEPHALIC Vein receive?

8 Where does the CEPHALIC Vein *terminate?*

9 What is the *situation* of the BASILIC Vein?

10 What are the chief *branches* which the BASILIC Vein receives?

11 Where does the BASILIC Vein *terminate?*

12 What is the *situation* of the MEDIAN Vein?

13 How does the MEDIAN Vein *terminate?*

14 What is the chief *branch* which joins the MEDIAN Vein?

SECTION LII.

OF THE INFERIOR CAVA.

1 What is the *origin* of the INFERIOR CAVA?

2 What is the *course* of the INFERIOR CAVA?

3 What *Veins* are received by the INFERIOR CAVA?

4 Where do the *Hepatic Veins* enter the INFERIOR CAVA?

5 What is the *course* of the EMULGENT VEINS?

6 What are the *terminations* of the SPERMATIC VEINS?

7 What is the *course* of the PRIMITIVE ILIAC VEINS?

8 Into what *branches* do the PRIMITIVE ILIACS divide?

9 What *Veins* does the INTERNAL ILIAC receive?

10 What *Veins* does the EXTERNAL ILIAC receive?

SECTION LIII.

OF THE VEINS OF THE LOWER EXTREMITIES.

1 How are the VEINS OF THE LOWER EXTREMITIES arranged?

2 What are the *Deep-seated Veins* of the lower Extremity?

3 What are the *Superficial Veins* of the lower Extremity?

4 What is the *situation* of the SAPHINA MAJOR?

Quest.

5 What *branches* does the Saphina Major receive in its course?

6 Where does the Saphina Major *terminate?*

7 What is the *course* of the Saphina Minor?

8 Where does the Saphina Minor *terminate?*

SECTION LIV.

OF THE VENA PORTÆ.

1 What is the Vena Portæ?

2 What is the *Vena Portæ Abdominalis?*

3 What is the *Vena Portæ Hepatica?*

4 Where is the Trunk of the Vena Portæ *situated?*

5 How is the Trunk of the Vena Portæ *formed?*

6 Whence does the *Vena Meseraica Major* derive its blood?

7 What Veins does the Splenic receive?

8 Whence does the *Vena Meseraica Minor*, or Hæmorrhoidalis Interna, derive its blood?

9 What *lesser Veins* join the Trunk of the Vena Portæ?

SECTION LV.

OF THE ABSORBENT SYSTEM IN GENERAL.

1 What are the Absorbents?

2 What *division* has been made of the Absorbents?

3 What difference is there betwixt the Lacteals and Lymphatics?

4 How do the Absorbents begin?

5 What is the general *course* of the Absorbents?

6 How do the Absorbents *terminate?*

7 What is the Thoracic Duct?

8 What is the *structure* of the Absorbents?

9 How many *coats* have the Absorbents?

10 How is the *Cuticular Coat* disposed?

11 What are the Lymphatic Glands?

12 Where are the Lyymphatic Glands *situated?*

13 What are the *Vasa Inferentia*, and the *Vasa Efferentia?*

SECTION LVI.

OF THE LYMPHATICS OF THE HEAD AND NECK.

Quest.

1 How are the Lymphatics of the Head and Neck classed?
2 What is the *course* of the Facial Lymphatics?
3 What is the *course* of the Temporal Lymphatics?
4 What is the *course* of the Occipital Lymphatics?
5 What is the *course* of the Thyroideal Lymphatics?
6 Are there any Lymphatics of the *Brain?*

SECTION LVII.

OF THE LYMPHATICS OF THE UPPER EXTREMITIES.

1 What is the *course* of the Superficial Lymphatics of the upper Extremities?
2 What is the *course* of the Deep-seated Lymphatics of the upper Extremities?
3 How do the Lymphatics of the upper Extremities *terminate?*
4 Where does the *left* Axillary Lymphatic Trunk *terminate?*
5 Where does the *right* Axillary Lymphatic Trunk *terminate?*

SECTION LVIII.

OF THE LYMPHATICS OF THE LOWER EXTREMITIES.

1 What is the *course* of the Superficial Lymphatics of the lower Extremities?
2 What is the *course* of the Deep-seated Lymphatics of the Lower Extremities?

SECTION LIX.

OF THE LYMPHATICS OF THE TRUNK.

1 Describe briefly the Lymphatics of the Pelvis.
2 Describe briefly the Lymphatics of the Abdomen.
3 Describe briefly the Lymphatics of the Thorax.

SECTION LX.

OF THE LACTEAL SAC AND DUCT.

Quest.

1 Where is the Lacteal Sac *situated?*
2 What is the *form* of the Lacteal Sac?
3 In what does the Lacteal Sac *terminate?*
4 What is the *course* of the Thoracic Duct?
5 Where does the Thoracic Duct *terminate?*
6 How is the *Orifice* of the Thoracic Duct *protected?*

NEUROLOGY.

SECTION LXI.

OF THE NERVES IN GENERAL.

1 What are the Nerves?
2 From what parts do the Nerves take their origin?
3 What is the general *course* and *distribution* of the Nerves?
4 What communication have the different Nerves with each other?
5 What is the *structure* of the Nerves?
6 What are the *coverings* of the Nerves?
7 How are the Nerves nourished?
8 What is the *structure* of the Ganglions?
9 How are the Nerves classed?
10 How do the *Cerebral Nerves* pass out of the Cranium?
11 How do the *Spinal Nerves* pass out of the Vertebral Canal?
12 Enumerate the *Cerebral Nerves.*
13 How are the *Spinal Nerves* divided?

SECTION LXII.

OF THE CEREBBRAL NERVES.

FIRST PAIR.

Quest.

1 Whence do the OLFACTORY Nerves *arise?*

2 What is their *course* within the Cranium?

3 How do the OLFACTORY Nerves pass out of the Cranium?

4 What is the *distribution* of the OLFACTORY Nerves?

5 What are the *communications* of the OLFACTORY with other Nerves?

SECOND PAIR.

6 Whence do the OPTIC Nerves *arise?*

7 What is the *course* of the OPTIC Nerves within the Cranium?

8 How do the OPTIC Nerves pass out of the Cranium?

9 What is the *distribution* of the OPTIC Nerves?

THIRD PAIR.

10 Whence do the MOTORES OCULORUM arise?

11 What is the *course* of the MOTORES OCULORUM within the Cranium?

12 How do the MOTORES OCULORUM pass out of the Cranium?

13 Enumerate the *branches* of the MOTORES OCULORUM.

14 What is the course and distribution of the *Ciliary Plexus?*

FOURTH PAIR.

15 Whence do the PATHETICI *arise?*

16 What is the *course* of the PATHETICI within the Cranium?

17 Where do the PATHETICI pass out of the Cranium?

18 What is the *distribution* of the PATHETICI?

FIFTH PAIR.

Quest.

19 Whence *arise* the TRIGEMINI?

20 What is the *course* of the TRIGEMINI within the Cranium?

21 What are the *branches* of the TRIGEMINI?

22 How does the *Ophthalmic Branch* pass out of the Cranium?

23 How does the *Superior Maxillary Branch* pass out of the Cranium?

24 How does the *Inferior Maxillary Branch* pass out of the Cranium?

25 What is the distribution of the *Rami* of the *Ophthalmic* Branch?

26 What is the distribution of the *Rami* of the *Superior Maxillary* Branch?

27 What is the distribution of the *Rami* of the *Inferior Maxillary* Branch?

SIXTH PAIR.

28 Whence *arise* the MOTORES EXTERNI?

29 What is the *course* of the MOTORES EXTERNI within the Cranium?

30 How does the MOTORES EXTERNI pass out of the Cranium?

31 What is the *distribution* of the MOTORES EXTERNI?

SEVENTH PAIR.

32 Whence *arise* the AUDITORY NERVES?

33 What is the *course* of the AUDITORY NERVES within the Cranium?

34 Of what *portions* do the AUDITORY NERVES consist?

35 What is the *relative situation* of the two Portions of which it consists?

36 What is the *distribution* of the PORTIO MOLLIS?

37 How does the PORTIO DURA pass out of the Cranium?

38 What *Filaments* does the PORTIO DURA give off within the Fallopian Aqueduct?

39 What great *branches* does the PORTIO DURA give off in its emerging from the Foramen Stylo-Mastoideum?

Quest.

40 With what Nerves does the PORTIO DURA communicate?

EIGHTH PAIR.

41 Whence does the EIGHTH PAIR of Nerves *arise?*
42 Of what *portions* do the EIGHTH PAIR consist?
43 How do the EIGHTH PAIR of Nerves pass out of the Cranium?
44 Where is the EIGHTH PAIR joined by the Nervus Accessorius?
45 What is the *course* and *distribution* of the NERVUS ACCESSORIUS?
46 How is the *Glosso-Pharyngeal* Nerve distributed?
47 What is the situation of the PAR VAGUM in its passage from the Head to the Chest?
48 What are the first *branches* which the PAR VAGUM gives off?
49 How does the PAR VAGUM enter the Thorax?
50 Where is the RECURRENT Nerve given off?
51 What is the *course* and *distribution* of the RECURRENT Nerve?
52 What is the *course* and *distribution* of the rest of the PAR VAGUM?

NINTH PAIR.

53 Whence *arise* the NINTH PAIR of Nerves?
54 How do the NINTH PAIR of Nerves make their exit from the Cranium?
55 To what Nerves do the NINTH PAIR *adhere* on their exit from the Cranium?
56 What is the *course* of the NINTH PAIR toward the Tongue?
57 What *branches* does the NINTH PAIR give off in its course toward the Tongue?
58 How is the *Descendens Noni* distributed?

TENTH PAIR.

59 Whence do the SUB-OCCIPITAL PAIR *arise?*
60 How do the SUB-OCCIPITAL PAIR make their *exit* from the Cranium?
61 What *branches* are given off by the SUB-OCCIPITAL PAIR?

SECTION LXIII.

OF THE VERTEBRAL NERVES IN GENERAL.

Quest.

1 In what manner do the VERTEBRAL NERVES *arise* from the Medulla Spinalis?

2 How do the VERTEBRAL NERVES pass from the Canal of the Spine?

3 How are the two Fasciculi of the VERTEBRAL NERVES *connected* on their exit from the Spine?

4 How many *Pairs* are there of SPINAL NERVES?

5 How are the SPINAL NERVES *divided?*

SECTION LXIV.

OF THE CERVICAL NERVES.

FIRST PAIR.

1 How does the FIRST PAIR of Cervical Nerves make its *exit?*

2 How is the anterior branch of the First Pair of CERVICAL NERVES *distributed?*

3 How is the posterior branch of the FIRST PAIR of Cervical Nerves *distributed?*

SECOND PAIR.

4 Where does the SECOND PAIR of Cervical Nerves make its *exit?*

5 How is the anterior branch of the SECOND PAIR of Cervical Nerves *distributed?*

6 What is the distribution of the posterior branch of the SECOND PAIR of Cervical Nerves?

THIRD PAIR.

7 Where does the THIRD CERVICAL PAIR pass from the Vertebral Canal?

8 How is the anterior branch of the THIRD CERVICAL PAIR distributed?

9 What is the *distribution* of the posterior branch of the THIRD PAIR of Cervical Nerves?

DIAPHRAGMATIC NERVE.

Quest.

10 How is the Diaphragmatic Nerve *formed?*

11 What is the *course* of the Diaphragmatic Nerve?

12 In what does the *course* of the *right* Diaphragmatic Nerve differ from that of the *left?*

13 How is the Diaphragmatic Nerve *distributed?*

FOURTH, FIFTH, SIXTH, AND SEVENTH PAIRS.

14 How do the Last Four Pairs of Cervical Nerves pass to the Neck?

15 How are their *posterior branches distributed?*

16 How are their *anterior branches distributed?*

SECTION LXV.

OF THE BRACHIAL NERVES.

1 What is the Axillary Plexus?

2 How is the Axillary Plexus constructed?

3 Whence do the Brachial Nerves *arise?*

4 What are the *names* of the Brachial Nerves?

5 From what part of the Great Plexus do the Brachial Nerves generally arise?

6 Where does the Scapularis Nerve *arise?*

7 What is the *course* and *distribution* of the Scapularis?

8 Where do the Thoracic Nerves *arise?*

9 What is the *course* and *distribution* of the Thoracic Nerves?

10 What is the *course* and *distribution* of the Musculo-Cutaneous?

11 What is the *course* and *distribution* of the Median Nerve?

12 What is the *course* and *distribution* of the Cubital Nerve?

13 What is the *course* and *distribution* of the Cutaneus Internus Nerve?

14 What is the *course* and *distribution* of the Radial Nerve?

15 What is the *course* and *distribution* of the Axillary Nerve?

SECTION LXVI.

OF THE DORSAL NERVES.

Quest.

1 Of how many *Pairs* do the Dorsal Nerves consist?

2 How do the Dorsal Nerves *pass* from the Vertebral Canal?

3 How do they resemble each other in their *distribution?*

4 How are the *posterior branches* of the Dorsal Nerves distributed?

5 How are the *anterior branches* of the Dorsal Nerves distributed?

6 To the formation of what Nerves do the First Dorsal Pair *contribute?*

7 How are the Intercosto-humeral Nerves *formed?*

8 How are the lowest Five Dorsal Nerves *distributed?*

SECTION LXVII.

OF THE LUMBAR NERVES.

1 Of how many pairs do the Lumbar Nerves consist?

2 What is the general *course* and *distribution* of the Lumbar Nerves?

FIRST PAIR.

3 What is the *course* and *distribution* of the First Lumbar Pair?

SECOND PAIR.

4 What is the *course* and *distribution* of the Second Lumbar Pair?

THIRD PAIR.

5 What is the *course* and *distribution* of the Third Lumbar Pair?

FOURTH PAIR.

Quest.

6 What is the *course* and *distribution* of the FOURTH LUMBAR PAIR?

FIFTH PAIR.

7 What is the *course* and *distribution* of the FIFTH LUMBAR PAIR?

OBTURATOR NERVE.

8 What is the *origin* of the OBTURATOR NERVE?
9 What is the *course* and *distribution* of the OBTURATOR NERVE?

SECTION LXVIII.

OF THE SACRAL NERVES.

1 Of how many pairs do the SACRAL NERVES *consist?*
2 How are the SACRAL NERVES *distributed?*
3 What relation do they bear to each other in *size?*
4 Which of them form the SCIATIC PLEXUS?
5 What are the *Branches* proceeding from the SCIATIC PLEXUS?
6 How are the *two last Pairs* of the SACRAL NERVES *distributed?*

SECTION LXIX.

OF THE CRURAL AND SCIATIC NERVES.

CRURAL NERVE.

1 How is the CRURAL NERVE *formed?*
2 How does the CRURAL NERVE pass out of the Abdomen?
3 How is the CRURAL NERVE situated with regard to the Artery and Vein in its passage from the Abdomen?
4 What is the *course* and *distribution* of the CRURAL NERVE?

SCIATIC NERVE.

Quest.

5 How is the GREAT SCIATIC Nerve *formed?*

6 How does the GREAT SCIATIC Nerve *pass out* of the Pelvis?

7 What Branches does the SCIATIC NERVE give off in its passage to the Ham?

8 What is the *course* and *distribution* of the POPLITEAL NERVE?

9 What is the *course* of the TIBIAL NERVE?

10 What is the *distribution* of the TIBIAL NERVE?

11 What is the *course* and *distribution* of the INTERNAL PLANTAR NERVE?

12 What is the *course* and *distribution* of the EXTERNAL PLANTAR NERVE?

13 What is the *course* and *distribution* of the FIBULAR NERVE?

SECTION LXX.

OF THE GREAT SYMPATHETIC NERVE.

1 What is the general *situation* of the GREAT SYMPATHETIC Nerve?

2 What is the origin of the GREAT SYMPATHETIC NERVE?

3 What is the general arrangement of the GREAT SYMPATHETIC NERVE?

4 How are the *Ganglia* of the SYMPATHETIC divided?

5 How many *Cervical Ganglia* are there?

6 What is the *form* and *situation* of the *First*, or *Superior Cervical Ganglion?*

7 What Branches join the *Superior Cervical Ganglion?*

8 What are the *communications* which the descending Trunk of the GREAT SYMPATHETIC forms in the Neck?

9 What are the Branches given off by the *Middle Cervical Ganglion?*

10 Where is the *Inferior Cervical Ganglion* situated?

11 What Branches does the *Inferior Cervical Ganglion* give and receive?

Quest.

12 Where does the GREAT SYMPATHETIC form the *First Dorsal Ganglion?*

13 How are the *Inferior Cervical*, and *First Dorsal Ganglia* connected?

14 How is the *Cardiac Plexus* formed?

15 What is the *course* of the GREAT SYMPATHETIC Trunk as it descends in the Thorax?

16 Where are its DORSAL GANGLIA *situated?*

17 With what Nerves do the DORSAL GANGLIA regularly communicate?

18 What *Branches* does the GREAT SYMPATHETIC give off about the middle of the Thorax?

19 Where does the SPLANCHNIC NERVE perforate the Diaphragm?

20 Where does the GREAT SYMPATHETIC NERVE form the *Semilunar Ganglion?*

21 What are the connexions and branches of the SEMILUNAR *Ganglion?*

22 To what parts is the CÆLIAC PLEXUS distributed?

23 To what parts is the HEPATIC PLEXUS distributed?

24 To what parts is the SPLENIC PLEXUS distributed?

25 To what parts is the RENAL PLEXUS distributed?

26 To what parts is the SUPERIOR MESENTERIC PLEXUS distributed?

27 To what parts is the INFERIOR MESENTERIC PLEXUS distributed?

23 To what parts is the HYPOGASTRIC PLEXUS distributed?

29 To what parts is the SPERMATIC PLEXUS distributed?

30 How is the Trunk of the GREAT SYMPATHETIC disposed of after having detached the five branches which form the *Splanchnic* Nerve?

31 What filaments do the *Lumbar Ganglia* receive from the Lumbar Nerves?

32 With what Nerves do the *Sacral Ganglia* communicate?

33 How do the GREAT SYMPATHETIC NERVES terminate?

34 What filaments proceed from the Arch in which the SYMPATHETIC NERVES terminate?

APPENDIX.

PECULIARITIES OF THE FEMALE.

Quest.

1 What is peculiar in the FEMALE SKELETON?

2 What is remarkable in the INTEGUMENTS of the Female?

3 What are the most *important Peculiarities* of the Female?

4 What is the *situation* of the MAMMÆ?

5 What is the *size* of the MAMMÆ?

6 Of what *parts* do the MAMMÆ consist?

7 What are the PAPILLÆ, or NIPPLES?

8 What is the *structure* of the NIPPLE?

9 What is the *structure* of the AREOLA?

10 What is the *structure* of the Body of the MAMMA?

11 What is the *use* of the MAMMÆ?

PECULIARITIES OF THE FŒTUS.

1 What is peculiar to the *Bones* of the FŒTUS?

2 What is remarkable in the *Adipose Substance* of the FŒTUS?

3 What is remarkable in the *Brain* and *Nerves* of the FŒTUS?

4 What is peculiar in the *Eye* of the FŒTUS?

5 What is peculiar in the *Glandular System* of the FŒTUS?

6 How is the *Testicle* situated in the FŒTUS?

7 What are the *parts* peculiar to the FŒTAL CIRCULATION?

8 Describe the *Foramen Ovale.*

9 Describe the *Canalis Arteriosus.*

10 Describe the *Canalis Venosus.*

11 What is the course of the *Umbilical Vein?*

12 What is the course of the *Umbilical Arteries?*

13 How is the *Umbilical Chord* formed?

14 Describe the course of the FŒTAL CIRCULATION.

END OF VOLUME I.

ANATOMICAL EXAMINATIONS.

A COMPLETE SERIES

OF

ANATOMICAL QUESTIONS,

WITH

ANSWERS.

THE ANSWERS ARRANGED SO AS TO FORM

AN ELEMENTARY SYSTEM OF ANATOMY,

AND INTENDED AS

PREPARATORY TO EXAMINATIONS AT

SURGEON'S HALL.

TO WHICH ARE ANNEXED

TABLES OF THE BONES, MUSCLES, AND ARTERIES.

VOLUME II.

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ANATOMICAL EXAMINATIONS.

PART SECOND.

CONTAINING

THE ANSWERS.

SECTION I.

OF ANATOMY IN GENERAL.

Answ.

1 ANATOMY is that Science which teaches us the STRUCTURE of the human body.

2 *Morbid Anatomy* explains the ALTERATIONS in the Structure of the Body, which are induced by Disease.

3 *Physiology* is that Science which teaches us the FUNCTIONS of the Body, or the Uses of its Parts.

4 *The component Parts of the Body* are divided into SOLIDS and FLUIDS.

5 *The Solids* are the BONES, CARTILAGES, LIGAMENTS, MUSCLES, CELLULAR SUBSTANCE, MEMBRANES, VESSELS, NERVES, GLANDS, VISCERA, ADIPOSE SUBSTANCE, &c.

6 *Bones* are the most hard and inflexible parts of the Body, affording support and protection to all the rest.

7 *Cartilages* are the polished elastic substances covering the ends of the Bones; and, excepting these, harder than any other parts.

8 *Ligaments*, though firm and inelastic, are flexible Bodies, connecting the Bones.

Answ.

9 *Muscles* are bundles of red, soft and contractile fibres; the white hard and inelastic terminations of which are denominated TENDONS, when in the form of Chords—*Aponeuroses*, or Fascia, when expanded as Membranes.

10 *Cellular Membrane* is a tissue of interwoven Membranes.

11 *Membranes* are sheets of interwoven Fibres.

12 *Vessels* are long cylindrical and flexible Tubes, dividing and subdividing into smaller Branches; they are of three kinds: 1. Arteries, 2. Veins, 3. Lymphatics.

13 *Nerves* are bundles of small white Cords, proceeding to, or from the Brain and Spinal Marrow.

14 *The Glands* are distinct bodies formed by a peculiar arrangement of Arteries, Veins, Lymphatics, and Nerves, in a Cellular Parenchyma.

15 *Viscera* are complicated Organs somewhat loosely contained in the great cavities of the Body, such as the Stomach, Intestines, &c.

16 *The Adipose Substance* consists of a Cellular Substance, within whose interstices an Oleaginous Fluid is deposited.

17 *The Fluids of the Body* are the BLOOD, PERSPIRABLE MATTER, URINE, SEBACEOUS MATTER, ANIMAL OIL, CERUMINOUS MATTER, SALIVA, TEARS, MUCUS, BILE, GASTRIC JUICE, SEMEN, SYNOVIA, PANCREATIC JUICE, MILK, CHYLE, &c.

18 *The Blood* is the Fluid which circulates through the Veins and Arteries, which supplies the Body with Nutriment, and from which all its other Fluids are secreted.

19 *The Urine* is a Fluid which is secreted by the Kidneys.

20 *The Perspirable Matter* is a Fluid exhaled from the minute Vessels of the Skin.

21 *The Cerumen* is a Fluid secreted by the Ceruminous Glands of the Meatus Auditorius Externus.

22 *The Sebaceous Matter* is a Soapy Fluid, secreted by the Sebaceous Glands of the Skin.

22* *Animal Oil* is the Oleaginous Fluid which occupies the Cells of the Adipose Substance, and the internal Cavities of the Bones, where it is called the *Medullary Substance*, or *Marrow*.

Answ.

23 *Saliva* is a Fluid secreted by the Salival Glands of the Mouth.

24 *The Tears* are a Fluid secreted by the Lachrymal Gland in each Orbit.

25 *Mucus* is a Fluid secreted by the Mucous Glands of the Mouth, Nose, &c.

26 *Bile* is a Fluid secreted by the Liver.

27 *Gastric Juice* is a Fluid secreted by the Stomach.

28 *Semen* is a Fluid secreted by the Testes, Vesiculæ Seminales, and Prostate Gland.

29 *Synovia* is a Fluid which lubricates the Surfaces of Joints.

30 *Pancreatic Juice* is a Salival Fluid, secreted by the Pancreas.

31 *Milk* is a Fluid secreted by the Glands of the Female Breasts.

31* *Chyle* is a Milky Fluid obtained by digestion from our Food, and passing into the Blood Vessels is there converted into Blood.

32 Each kind of solid substance is considered apart: this occasions the division of Anatomy into OSTEOLOGY, OSTEOGENY, SYNDESMOLOGY, CHONDROLOGY, MYOLOGY, ADENOLOGY, SPLANCHNOLOGY, BURSALOGY, ANGIOLOGY, NEUROLOGY, &c.

33 *Osteology* treats of the Form of perfect Bones.

34 *Osteogeny* of the Ossific Process, or of the growth of Bone.

35 *Syndesmology* of the Ligaments.

36 *Chondrology* of the Cartilages.

37 *Myology* of the Muscles, and their appendages the Tendons and Aponeuroses.

38 *Adenology* of the Glands.

39 *Splanchnology* of the Viscera, and Organs of Sense.

40 *Bursalogy* of the Bursæ Muscosæ.

41 *Angeology* of the Vessels.

42 *Neurology* of the Nerves.

SECTION II.

OF THE BONES IN GENERAL.

Answ.

1 The Bones are every where invested by a Membrane called *Periosteum*, whilst

2 *Perichondrium* is the name given to the continuation of the same Membrane over the Cartilages.

3 *The Periosteum* strengthens the union of Bones with their Epiphyses, affords attachment for Ligaments and Muscles, permits the Muscles to glide smoothly over the Bones, and conducts and supports Vessels in their passage to Bones.

4 A delicate Membrane which lines all the internal Cavities of Bones, is called *Internal Periosteum*.

5 Whose use is to form little sacs to contain the Marrow.

6 Bones are divided into three Classes, viz. the LONG or CYLINDRICAL, the BROAD or FLAT, and the MIXED BONES.

7 The name of *Epiphyses* has been given to the Extremities and great Projections of the Bones in the Fœtus, which at this time are united to the body of the Bones by Cartilage.

8 Their internal structure is *spongy*.

9 The middle Portions of the long Bones placed between the Epiphyses, are called *Diaphyses*.

10 *Their Interior* is RETICULAR.

11 *Their Exterior* is COMPACT.

12 *Apophyses* are great Projections, or distinct portions of Bones.

13 They are distinguished from *Epiphyses* in being less easily separable from the Bone to which they belong, no Layer of Cartilage being interposed between them. The Epiphyses of the Fœtus become Apophyses in the adult.

14 BONES CONSIST OF A CELLULAR, RETICULAR, AND VASCULAR PARENCHYMA, AND OF OSSEOUS MATTER DEPOSITED IN IT; *their base, therefore, being the same with that of the Muscles, Nerves, and soft parts of the Body.*

Answ.

15 THEY ARE NOT FORMED OF FIBRES AND PLATES, OR LAMELLÆ.

16 They are at all times Vascular, but they are more especially so during the Ossific Process. Their Vessels enter

17 By numerous small Foramina all over their external surface.

18 Their Vascularity is proved by the tinge which they receive in animals with whose food the *Rubia Tinctorum*, or *Madder*, has been mixed.

19 *The Medulla* is an Oleaginous Fluid, deposited in their internal cells;

20 It is secreted by minute Arteries, which ramify upon the sacs of the internal Periosteum, whose Trunks

21 Generally penetrate the Bones about their middle by oblique canals.

22 The use of the *Medulla* is not accurately ascertained. In Soemmerring's opinion it tends to render the Bones comparatively lighter.

23 *The External Parts* of Bones are the following, FORAMINA, CANALS, SINUSES, SINUOSITIES, FURROWS, NOTCHES, FOSSÆ, PITS, GLENOID CAVITIES, COTYLOID CAVITIES, TUBERCLES, TUBEROSITIES, SPINES, HEADS, NECKS, PROCESSES, &c.

24 *Foramina* are holes perforating the substance of Bones, without leaving any long tract within their substance.

25 *Canals* are Foramina continued within the substance of Bones.

26 *Sinuses* are great Cavities in Bones, with small openings.

27 *Sinuosities* are superficial, but broad irregular Depressions.

28 *Furrows* are long, narrow, and superficial Canals.

29 *Notches* are Cavities in the Margins of Bones.

30 *Fossæ* are deep and large Cavities upon their Surface.

31 *Pits* are small, though deep Depressions.

32 *Glenoid Cavities* are smooth shallow Cavities for Articulation.

33 *Cotyloid Cavities* are deep and smooth for Articulation.

34 *Tubercles* are small Eminences.

35 *Tuberosities* are greater rough Elevations.

Answ.

36 *Spines* are long Projections.

37 *Heads* are round Tops of Bones.

38 *Necks* are the narrow Portions of Bones beneath their Heads.

39 *Processes* are projecting Portions of Bones.

SECTION III.

OF ARTICULATION IN GENERAL.

1 The CONNEXION of Bones with each other is called *Articulation*, which is divided into three classes,

2 Namely, SYMPHYSIS, SYNARTHROSIS, and DIARTHROSIS.

3 *Symphysis* expresses the SUBSTANCE CONNECTING Bones.

4 *Synarthrosis* expresses the IMMOVABLE CONNEXION of Bones.

5 *Diarthrosis* expresses the MOVABLE CONNEXION of Bones.

6 *Symphysis* is subdivided into SYNOSTOSIS, SYNDESMOSIS, SYNCHONDROSIS, SYSSARCOSIS, and SYNEUROSIS.

7 *Synarthrosis* is subdivided into SUTURE, HARMONIA, SCHINDYLESIS, and GOMPHOSIS.

8 *Diarthrosis* is subdivided into ENARTHROSIS, ARTHRODIA, AMPHIARTHROSIS, and GINGLYMUS.

9 *Synostosis* expresses the *conjunction of Bones by Osseus Matter*, as that of the Sphœnoid and Occipital.

10 *Syndesmosis* expresses *conjunction by Ligaments*, as in all the movable Joints.

11 *Synchondrosis* expresses *conjunction by Cartilage*, as that of the Ribs and Sternum.

12 *Syssarcosis* expresses their *conjunction by Muscles*, as in all the movable Joints.

13 *Syneurosis* expresses *conjunction by Membranes*, as that of the Radius and Ulna.

14 *Suture* expresses *conjunction by Indented Margins*, as that of the two Parietal.

15 *Harmonia* expresses the *conjunction by Straighter Margins*, as that of the Ossa Nasi.

Answ.

16 *Schindylesis* expresses the *reception of the Spine of one Bone by the Furrow of another*, as the Vomer receives the Azygos Process of the Sphœnoidal Bone.

17 *Gomphosis* expresses *such Conjunction, as that of the Teeth with their Sockets.*

18 *Enarthrosis* expresses the *reception of the Head of one Bone by a Deep Cavity of another*, as the Acetabulum receives the Head of the Femur.

19 *Arthrodia* expresses the *reception of the Head of one Bone by a Superficial Cavity of another*, as the Glenoid Cavity of the Scapula receives the Head of the Humerus.

20 *Amphiarthrosis* expresses *conjunction of Bones by Plain Surfaces*, as those of the Cuneiform and Metatarsal Bones.

21 *Ginglymus* expresses the *Hinge-like Articulation*, as that of the Elbow Joint, of which there are three kinds;

22 Namely, the *Ginglymus Simplex*, *Ginglymus Compositus*, and *Ginglymus Trochoides.*

23 *Ginglymus Simplex* is that species *where corresponding, elevated, and depressed Surfaces constitute one Joint*, as that of the Elbow, &c.

24 *Ginglymus Compositus* is that species *where two different hinge-like Joints serve one purpose*, as in the Articulation of the Radius and Ulna.

25 *Ginglymus Trochoides* is that species *where one Bone turns round a point of another*, as the Atlas moves upon the Process of the Dentata.

SECTION IV.

OF OSTEOGENY.

1 Osteogeny treats of the growth of Bones.

2 They are formed by the deposition of Ossific Matter, either between *Membranes*, or in *Cartilage.*

3 Their constituent parts are a Cellular and Vascular Parenchyma, and a Phosphate of Lime, with other saline combinations.

4 Ossification is thus effected: the Arteries of the part about to undergo this process become dilated; though

Answ.

formerly transparent, they now assume a red colour; the Cartilage itself is not transmuted into Bone, but becomes gradually absorbed, whilst the Ossific Matter is deposited in its place.

5 In the *Diaphyses* of long Bones this process begins in the middle, forming FLAT RINGS, between the external and internal Periosteum.

6 At their *Epiphyses* in DISTINCT POINTS, which gradually unite, whilst in flat Bones, as

7 In the Bones of the *Cranium* it assumes the appearance of RADII DIVERGING FROM A CENTRE.

8 The small Bones of the Ear are perfectly formed at Birth.

9 The Epiphyses are the parts latest ossified; usually

10 *About seven or eight Years of Age.*

11 *About twenty Years of Age*, they are converted into Apophyses by bony union with the Diaphyses.

SECTION V.

OF THE HEAD AND ITS SUTURES.

1 The Bones of the Head are divided into those belonging to the Cranium, and those belonging to the Face.

2 The Bones of the Cranium consist of TWO TABLES, or BONY PLATES, and an INTERMEDIATE DIPLOE. Of these

3 The external Table is the thickest.

4 The *Diploe* is of a Cellular Structure, like the Epiphyses of the long Bones.

5 PERICRANIUM is the name given to the *Periosteum* of these Bones.

6 The Bones of the Face are of an IRREGULAR structure.

7 The Bones of the Cranium are eight in number: the OS FRONTIS, two OSSA PARIETALIA, two OSSA TEMPORUM, OS OCCIPITIS, OS SPHŒNOIDES, OS ETHMOIDES.

8 Of these five are proper to the Cranium, viz. The two OSSA PARIETALIA, two OSSA TEMPORUM, and OS OCCIPITIS.

Answ.

9 Three are common to the Cranium and Face, *namely*, The Os FRONTIS, Os SPHŒNOIDES, and Os ETHMOIDES.

10 There are fourteen Bones of the Face, viz. The two OSSA NASI, two OSSA LACHRYMALIA, two OSSA MALARUM, two OSSA MAXILLARIA SUPERIORA, two OSSA PALATI, two OSSA TURBINATA INFERIORA, VOMER, and OS MAXILLARE INFERIUS.

11 *The Os Frontis* is situated in the anterior part of the Cranium;

12 *The Ossa Parietalia*, in the upper and lateral parts of the Cranium;

13 *The Ossa Temporum*, in the lower lateral parts, and partly in the base of the Cranium;

14 *The Os Occipitis*, in the base and back of the Cranium;

15 *The Os Sphœnoides*, in the middle of the base, and in the sides of the Cranium;

16 *The Os Ethmoides*, in the middle of the fore part of the base of the Cranium.

17 In the arch of the Nose are situated the *Ossa Nasi.*

18 In the anterior part of the Nasal sides of the Orbits, the *Ossa Lacrymalia.*

19 In the upper part of the Cheeks, the *Ossa Malarum.*

20 In the middle of the Face, constituting the upper Jaw, properly so called, are the *Ossa Maxillaria Superiora.*

21 In the back of the Orbits, Nares, and Palate, the *Ossa Palati* are placed.

22 In the lower part of the sides of the Nares, the *Ossa Turbinata Inferiora.*

23 In the middle of the Nares, the *Vomer* is situated.

24 The *Sutures* formed by the union of the Bones of the Cranium, are five in number, viz. The CORONAL, the SAGITTAL, the LAMBDOIDAL, and the two SQUAMOUS.

25 The SPHŒNOIDAL, the ETHMOIDAL, the TRANSVERSE, and the two ZYGOMATIC SUTURES, are the five formed by the union of the Bones of the Cranium with those of the Face.

26 The *Harmoniæ* of the Face are sixteen in number, viz. one PERPENDICULAR NASAL, two LATERAL NASAL, two LACHRYMAL, two TRANSVERSE NASAL, two EXTERNAL ORBITAL, one MYSTACHIAL, one TRANS-

Answ.

VERSE PALATINE, one LONGITUDINAL PALATINE, two MAXILLO-PALATINE.

27 *The Coronal Suture* stretches from above an Inch behind the temporal side of one Orbit, over the superior part of the Cranium, to the same place on the other, connecting the two Parietal Bones to the Frontal Bone.

28 *The Sagittal Suture* extends along the top of the Head from the middle of the Coronal to considerably behind the Vertex, connecting the Parietal Bones.

29 *The Lambdoidal Suture* begins at the termination of the Sagittal, and passes in the form of the Greek letter Λ forward and downward on each side, connecting the Occipital Bone to the Parietal Bones.

30 *The Squamous Sutures* are of a semicircular form, situated higher upon the Cranium than the top of the external Ear, connecting on each side the upper edge of the Os Squamosum, to the lower edge of the Os Parietale, which it overlopes.

31 The continuations on each side of the Lambdoidal Suture into the base of the Cranium, are called the *Additamenta Suturæ Lambdoidalis.*

32 The Posterior Serrated Portions of the Squamous Sutures are called its *Additamenta.*

33 *The Sphænoidal Suture* surrounds all the edges of the Sphœnoid Bone.

34 *The Ethmoidal Suture* surrounds all the edges of the Ethmoid Bone.

35 *The Transverse Suture* extends through the Orbits between the Cranium and Face, and joins the cranial and facial Bones.

36 *The Zygomatic Suture* is situated rather toward the anterior part of the Zygoma, it runs from above downward and backward, connecting the Zygomatic Processes of the Temporal and Cheek Bones.

37 *The perpendicular Nasal Harmonia* is situated in the middle of the Nasal Arch, connecting the two Ossa Nasi.

38 *The lateral Nasal Harmoniæ* are situated on each side of the Nasal Arch, connecting the Ossa Nasi to the Ossa Maxillaria.

39 *The Lachrymal Harmoniæ* surround the fore part of the

Answ.

Ossa Lachrymalia, connecting them to the Ossa Maxillaria.

40 *The Transverse Nasal Harmoniæ* are situated at the lower part of the Nares, internally connecting the Ossa Turbinata Inferiora to the Ossa Maxillaria.

41 *The External Orbital Harmoniæ* extend from the middle of the lower side of each Orbit downward and outward, to the lower part of each Os Malæ, connecting these Bones to the Ossa Maxillaria.

42 *The Internal Orbital Harmoniæ* extend from the middle of the inferior edge of each Orbit, to the lower anterior part of the Sphœno-Maxillary Fissure, connecting the Ossa Malarum to the Ossa Maxillaria.

43 *The Mystichal Harmonia* connects the Maxillary Bones immediately beneath the anterior aperture of the Nostrils.

44 *The Transverse Palatine Harmonia* stretches across the back part of the Palate, connecting the Palatine Processes of the Palate Bones, to those of the Superior Maxillary Bones.

45 *The Longitudinal Palatine Harmonia* extends from the middle of the anterior to the middle of the posterior part of the Palate, connecting the Palatine Processes of the Maxillary and Palate Bones of the one side to those of the other.

46 *The Maxillo-Palatine Harmoniæ* are situated at the back of the sides of the Nares, connecting the Palate Bones to the Bulbous Processes of the Superior Maxillary Bones.

47 *The Vomer* is connected with the Os Sphœnoides above, and with the Palatine and Superior Maxillary Bones below, by *Schyndylesis*.

48 The connexion betwixt the Teeth and their Sockets is an instance of *Gomphosis*.

SECTION VI.

OF THE BONES OF THE HEAD.

OS FRONTIS.

1 *The Os Frontis* is SITUATED in the anterior part of the Cranium, and superior part of the Face.

Answ.

2 It is divided into a Frontal and Facial Portion.

3 *The Frontal Portion* is situated *Superiorly*, being concave internally, and convex externally, its upper edge being semicircular, and possessing a double row of Small Serræ.

4 *The Facial Portion* is situated *Inferiorly*, and is of a very *irregular* form.

5 The following are the *Elevations* on this Bone, two Internal Angular Processes, at the insides of the Orbits—A Nasal Process between these—two Superciliary Ridges forming arches, the inner ends of which rest on the Internal Angular Processes, and the outer ends upon the two External Angular Processes at the outer edge of each Orbit:—A Temporal Process and Ridge immediately behind the External Angular Processes:—two Orbitar Plates, or Processes, which run back from the Superciliary Ridges:—two Bumps of the Frontal Sinuses, which are placed immediately above the Internal Angular Processes, and Eminences some way above the middle of the Superciliary Ridges which were the points of its Ossification.—All these elevations are situated externally, except the orbital Plates, which project internally, where also the Spine, ascending from the root of the Nose to the middle of the semicircular edge of the Bone, may be seen.

6 The *Trochlearis* internally, by means of its pully, and externally the *Corrugator Supercilii* are attached to the Internal Angular Process.

7 The origin of the *Temporalis* and its *Tendinous Aponeurosis*, are attached to the Temporal Ridge.

8 The *Falx-Cerebri*—a Duplicature of the Dura Mater—a Membrane of the Brain is attended to the Spine.

9 The *Anterior Lobes* of the Brain rest on the orbital Plates.

10 *The Depressions* on this Bone are its Orbital Depressions in the orbital Plates.—Its Lachrymal Depressions situated on the same Plates, and behind its External Angular Processes.—Its Depressions for the Pulleys of the Trochleares, on the inside of its Internal Angular Processes—Its Eth-

Answ.

MOIDAL FISSURE between its orbital Plates—Its TEMPORAL DEPRESSIONS behind its Processes of the same name—The GREAT CONCAVITY of the internal side of the Bone, and a FURROW along its Spine.

11 The *Lachrymal Glands* occupy the Lachrymal Depressions.

12 The *Cribriform Plate* of the Ethmoid Bone is received into the Ethmoidal Fissure.

13 The *Temporal Muscles* are placed in the Temporal Depressions.

14 The anterior part of the *Longitudinal Sinus*—a great Vein of the Dura Mater—is situated along the Furrow of its Spine.

15 The *Foramina* are externally two, called SUPERCILIARY, from their being situated about one third from the inner end of the Superciliary Ridges—and internally one called COECUM, situated at the root of the Spine.

16 The *Superciliary Foramina* transmit to the Forehead twigs of the *Ophthalmic Nerve*, *Artery* and *Vein*.

17 Through the *Foramen, Cœcum* an *Artery* and *Vein* occasionally pass to the Nose, and

18 A small process of the *Dura Mater* is fixed in it.

19 In the *Fœtus* it is divided down the middle, it contains no Sinuses, and neither the orbital Plates, nor the Superciliary Ridges are complete in it.

20 It is connected *superiorly* to the Parietal Bones, by the Coronal Suture; *posteriorly and inferiorly*, to the Sphœnoid Bone, by the Sphœnoidal Suture; and *inferiorly*, to the Bones of the Face, by the Transverse Suture.

21 It constitutes the Forehead and upper part of the Face, it supports and defends the anterior Lobes of the Brain, and forms a great part of the Orbits.

OS PARIETALE.

22 The *Os Parietale* is situated at the superior and lateral part of the Skull.

23 It is of a *Quadrangular* figure, convex externally, and concave internally.

Answ.

24 Its edges are, one *Superior*, one *Inferior*, one *Anterior*, and one *Posterior*.

25 Its angles are, one *Anterior Superior*, one *Anterior Inferior*, one *Posterior Superior*, and one *Posterior Inferior*.

26 Its ELEVATIONS are two externally, viz. a SEMICIRCULAR Ridge, somewhat less than half way up the bone;—and, in the middle of the Bone just above that Ridge, an EMINENCE which was its Fœtal Point of Ossification.

27 The *Temporal Muscle* is attached to the *Temporal Ridge.*

28 When the Convexity of the right Parietal Bone is turned outward, and its longest and most pointed angle is turned forward and downwards, the Bone will be placed in the situation it holds in the Body, and thus the side to which it belongs may be ascertained.

29 The DEPRESSIONS ON THIS BONE are the GREAT CONCAVITY of its inner side—a FURROW on the inside of its upper edge—a FURROW on the inside of its inferior posterior Angle—a FURROW on the inside of its anterior inferior Angle—and frequently PITS on its internal surface.

30 The middle portion of the *Longitudinal Sinus* is placed in the *Furrow* on the inside of the upper edge.

31 The middle portion of the *Lateral Sinus* occupies the Furrow on the inside of the inferior posterior Angle.

32 The anterior branch of the *Arteria, Meningea, Media*, or *Spinous artery*, it is situated in the Furrow, on the inside of the anterior inferior Angle.

33 *Vessels* passing to or from the bone, and the convulsions of the brain, fill the pits on the Internal Surface.

34 There is only ONE *Foramen* in the Os Parietale, which is placed towards the posterior part of its upper edge, which transmits

35 An *Artery* to the Dura Mater, and a *Vein* to the Longitudinal Sinus.

Answ.

36 Its *Angles* are unformed, its Sides are incomplete, nor does its Foramen exist in the *fœtal state.*

37 *Superiorly* it is connected to its fellow, by the Sagittal Suture, *Anteriorly* to the Os Frontis by the Coronal Suture, *Inferiorly*, to the Os Temporis, by the Squamous Suture, *Posteriorly*, to the Os Occipitis, by the Lambdoidal Suture, and by its anterior inferior Angle, with the Os Sphœnoides.

38 It constitutes the upper and lateral part of the Skull, and protects the middle lobes of the Brain.

OS TEMPORIS.

39 The *Os Temporis*, is situated at the lower part of the side and base of the Cranium.

40 It is divided into three portions, viz. the Squamous, the Petrous, and the Mammillary.

41 *The Squamous Portion* is placed *uppermost*, is smooth externally, and has a semicircular edge.

42 *The Mammillary Portion* is situated *posteriorly*, and is less regular and less thin than the Squamous.

43 *The Petrous Portion* is placed *inferiorly* and *internally*, and is the least regular of all.

44 *Its Eminences* are its Mammillary process, projecting downward from the portion of that name—its Zygomatic process standing outward and forward from the Squamous portion, and having a smooth Tubercle placed at the anterior inferior part of its base.—Its Styloid process projecting downward and forward from the Petrous portion.—Its Vaginal process placed between the Mastoid Styloid and Zygomatic.—And the ridge internally on the upper part of its Petrous portion.

45 Internally the Mammillary process is *cellular.*

46 The *Sterno-Cleido-Mastoideus*, and the *Trachelo-Mastoideus*, are attached to it.

47 The *Aponeurosis* of the Temporal Muscles is fixed to the upper edge of the Zygomatic Process.

48 A part of the *Masseter* to its lower edge.

49 The *Temporal Muscle* passes under it.

50 The *Tubercle at its base*, constitutes a part of the *Joint of the lower Jaw.*

51 The *Stylo-Hyoideus*, the *Stylo-Glossus* and the *Stylo-*

Answ.

Pharyngeus, a *Ligament* to the Os Hyoides, and the *Lateral Ligament* of the Lower Jaw, are attached to the *Styloid Process.*

52 The *Cartilage* of the Meatus Auditorius Externus, is fixed to the Auditory Process.

53 Part of the *Tentŏrium*, a duplicature of the Dura Mater, is attached to the *edge of the Petrous portion.*

54 The Depressions *of the Os Temporis* are the glenoid Cavity, for the articulation of the Lower Jaw, situated behind the Zygomatic, and before the Vaginal and Auditory Processes.—The Fissura Glasseri traversing the middle of that depression; a Fossa behind the Mastoid Process of the Bone, a Thimble-like Cavity internal to its Styloid Process, constituting part of the Jugular Foramen.—A Depression before its Zygomatic Process, called the Temporal.—A Furrow on the inside of its Mammillary portion.—A Furrow above, and another below the posterior surface of its Petrous portion.

55 Anteriorly the *Condyle of the Jaw*, and posteriorly a part of the *Parotid Gland*, occupy the *Glenoid Cavity.*

56 The *Laxator Tympani Major*, and *Chorda Tympani*, pass through the Fissura Glasseri.

57 The origin of the *Digastricus*, is attached to the *Mastoid Groove.*

58 Posteriorly the *Jugular Vein*, and Anteriorly the *Par-vagum*, *Glosso-Pharyngeal Nerve*, and *Nervus Accessorius* pass through the *Jugular Foramen.*

59 The *Temporal Muscle* is lodged in the *Temporal Depression.*

60 Part of the *Lateral Sinus* is placed in the *Furrow*, in the inside of the Mammillary Portion.

61 The *Superior* and *Inferior Petrosal Sinuses*, are lodged in the Furrows, at the upper and lower edges of the posterior surface of the Petrous portion.

62 The *Foramina of this bone* are externally the Meatus Auditorius Externus, placed between its Mastoid and Zygomatic processes.—The Foramen Stylo-Mastoideum, or opening of the Fallopian Aqueduct, situated between the Styloid and

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the Mastoid process.—The FORAMEN CAROTIDEUM, situated in the base of its Petrous portion.—The BONY CANAL of the Eustachian Tube, placed at the external side of the Petrous portion.—The CANAL which contains the Tensor Tympani is situated, immediately above the last, and—The FORAMEN MASTOIDEUM is placed behind the Mastoid process—Internally they are the MEATUS AUDITORIUS INTERNUS, which is situated on the posterior surface of the Petrous portion, and which divides into the FALLOPIAN AQUEDUCT Superiorly, and the TRACTUS FORAMINULOSUS COCHLEÆ inferiorly.—The opening of the AQUEDUCTUS COCHLEÆ is situated behind the edge of the posterior surface of the Petrous portion, immediately below the Meatus.—The opening of the AQUEDUCTUS VESTIBULI is situated on the posterior surface of the Petrous portion, about five lines behind the Meatus.—A small FORAMEN is situated on the superior surface of the same portion, and—The FORAMEN COMMON to this Bone and the Sphœnoid, is placed at the Anterior part of its Petrous portion—The FORAMEN COMMON to it with the Occipital, has already been described.

63 The *Portio Dura* or *Facial Nerve* passes outward, and an Artery enters to the Ear, by the *Stylo-Mastoid Foramen.*

64 *The Canalis Carotideus* transmits the *Carotid Artery,* and the beginning of the *Intercostal Nerve.*

65 *The Foramen Mastoideum* transmits an *Artery* to the Dura Mater, and a *Vein* to the lateral Sinus.

66 *The Meatus Auditorius Internus* transmits the *Portio Mollis* and *Dura* or the *Auditory* and the *Facial Nerve.*

67 *The Fallopian Aqueduct* transmits the continuation of the *Facial Nerve.*

68 *The Small Foramen* on the Superior Surface of the Petrous portion transmits the *Vidian Nerve* to join the Portio Dura.

69 In the *Fœtal State,* there exists in this bone no Meatus Auditorius Externus, but merely a bony ring, nor are the Styloid processes formed.

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70 It is connected *Anteriorly* to the Sphœnoid bone, by the Sphœnoidal Suture, *Superiorly* to the Parietal, by the Squamous Suture, and its Additamentum; *posteriorly* to the Occipital by the Lambdeidal Suture and its Additamentum, and to the lower jaw by Ginglymus.

71 The Ossa Temporum constitute the inferior lateral parts of the Cranium, support, on each side, the middle lobes of the Brain, transmit several Vessels and Nerves, and contain the organ of hearing.

OS OCCIPITIS.

72 *The Os Occipitis* is situated in the inferior and posterior part of the Cranium.

73 *Its Figure is Irregularly Rhomboidal* its *inferior* angle projecting forward, which part is called the Cuneiform process: while its *superior* one is rounded, and its *lateral* angles are obtuse. It is concave internally, and convex externally.

74 The ELEVATIONS on this bone are its CONDYLES, projections situated on each side, and somewhat anteriorly to the great Foramen in the middle of the Bone.—A rough PROTUBERANCE external to each of them—the elevated EDGES of the great Foramen —A LONGITUDINAL RIDGE on the posterior part of the bone—A SUPERIOR, and an INFERIOR TRANSVERSE RIDGE, crossing the longitudinal one—A SPINE in the middle of the Superior Transverse ridge—Internally it has a longitudinal and a TRANSVERSE RIDGE which cross each other, and are denominated its internal Crucial Spine.

75 Its CONDYLES are connected with the *Oblique Processes* of the Atlas.

76 The *Recti Laterales* of the Head, are fixed to the *Protuberances* external to the Condyles.

77 The *Perpendicular Ligament* of the second Vertebra, and that of the Anterior Arch of the Atlas, are fixed to the *Anterior Edge* of the great Foramen.

78 The *Ligament* of the Posterior Arch of the Atlas is attached to its posterior Edge.

79 The *Occipito-Frontales* and the *Trapezii* are attached to its Superior Transverse ridge and Spine.

80 The *Recti Majores Postici* and externally to them, the

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Obliqui Superiores arise from the *Inferior Transverse Ridge.*

81 The posterior part of the *Falx Cerebri* is fixed to the *Upper portion* of its internal Crucial Ridge, whilst

82 The *Tentorium*, a duplicature of the Dura Mater, is attached to its lateral Portions.

83 The *Falx Cerebelli*, a duplicature also of the Dura Mater, to its Inferior portion.

84 The Depressions of this bone are ONE below each Superior Transverse ridge—ONE below each side of its Superior Transverse ridge—ONE on the outside of each Condyle, which contribute to form the Jugular Foramina—A small DEPRESSION anterior to each of these—A FURROW in the upper portion of the Internal Crucial Spine—A FURROW in the inferior portion—A FURROW in each lateral portion of the same Spine—A DEPRESSION on each side of the superior portion—ONE on each side of the inferior portion of the same Spine—A FURROW immediately anterior to each of these—A great DEPRESSION on the Superior surface of the Cuneiform process, and a small FURROW on each side of that depression.

85 Internally the *Complexi*, and Externally the *Splenii*, are fixed to the *Hollow* between the external Transverse Ridges.

86 The *Recti Minores Postici* to the *Depression* between its inferior external transverse Ridge.

87 The *Jugular Foramina* are in part formed by the *Semilunar Depressions* external to the Condyles.

88 The *Recti Minores Antici* are fixed to the small depressions anterior to the Condyles.

89 The *Recti Majores Antici* before the last.

90 The posterior part of the *Longitudinal Sinus* occupies the *Furrow* of the upper portion of the internal crucial Ridge.

91 The first parts of the *Lateral Sinuses* are placed in the Furrows of the lateral Portions.

92 The *Occipital Sinus* rests on the Furrow of its inferior Portion.

93 The *Posterior Lobes* of the Cerebrum occupy the *Great Depressions* above the lateral portions.

94 The *Lobes* of the Cerebellum occupy those below.

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95 The terminations of the *Lateral Sinuses* are placed in the *Furrows*, immediately before these inferior Depressions.

96 The *Medulla Oblongata* is placed on the Superior surface of the Cuneiform Process.

97 The *Inferior Petrosal Sinuses* rest on the small *Furrows* on each side of it.

98 *The Foramina* are the FORAMEN MAGNUM immediately behind the Cuneiform process and the two Condyles of the bone.—The FORAMINA CONDYLOIDEA POSTERIORA, immediately behind the Condyles, and the FORAMINA CONDYLOIDEA ANTERIORA immediately before the Condyles.

99 *The Foramen Magnum* transmits the *Medulla Spinalis*, the *Nervi Accessorii*, the *Vertebral Arteries*, and sometimes the *Vertebral Veins*.

100 *The Foramen Condyloideum Posterius* transmits the *Cervical Veins* and the *Lateral Sinus*.

101 The *Foramen Condyloideum Anterius* transmits the *Ninth pair of Nerves* to the Tongue.

102 The Cuneiform process, the two sides of the great Foramen, and all the Bone posterior to it, in the *fœtal state*, are easily separable into four portions.

103 It is connected *anteriorly* to the Sphœnoid Bone by Synostosis, *inferiorly* to the Atlas, by Ginglymus Compositus, *laterally* to the Temporal Bones by the Additamenta of the Lambdoidal Suture, and *superiorly* to the Parietal bones by that Suture itself.

104 It forms the posterior, and a part of the inferior portion of the Cranium, it contains and defends the posterior Lobes of the Cerebrum, the Cerebellum, and Medulla Oblongata and gives exit to the Spinal Marrow.

OS SPHŒNOIDES.

105 The *Os Sphœnoides* passes from one Temple to the other, across the middle of the base of the Cranium.

106 *It is divided into a* BODY situated in the middle: an ALA on each side of it, and TWO PTERYGOID PORTIONS at its inferior part.

Answ.

107 The ELEVATIONS on this Bone are the PROCESSUS AZYGOS, standing forward and downward from its body.—The POSTERIOR CLINOID PROCESSES projecting upward and downward from the back part of its body.—The ANTERIOR CLINOID PROCESSES, one on each side placed anterior to these.—The TRANSVERSE SPINOUS PROCESSES, which are lateral continuations of the anterior Clinoid.—The ETHMOIDAL PROCESS projecting anteriorly between the two last.—The ORBITAL PROCESS, portions of the Ala turned toward the Orbits.—The TEMPORAL PROCESSES, portions of the Ala turned toward the Temples.—The SPINOUS PROCESSES which are posterior parts of the Ala.—The STYLIFORM PROCESSES which project downward from the points of the Spinous.—The EXTERNAL PTERYGOID PLATE which is the outer part of the Pterygoid portions, and the INTERNAL PTERYGOID PLATE surmounted by a HOOK-LIKE PROCESS forming the inner part of the Pterygoid portions.

108 The *Vomer* is joined to the *Processus Azygos.*

109 The *Pterygoideus externus* is fixed to the internal side of the external Pterygoid Plate.

110 The Tendon of the *Tensor Palati* passes over the Hook-like process.

111 The DEPRESSIONS are ONE on each side of its processus Azygos.—ONE between its Clinoid processes, called the Sella Turcica.—A FURROW on each side of that—DEPRESSIONS on its Orbitar processes—DEPRESSIONS on its Temporal processes—A FURROW on the anterior edge of the last—A DEPRESSION between the Temporal process and the Pterygoid portion of the Bone—The great Superior CONCAVITIES of the Alæ—A FURROW internal to the base of the Pterygoid portions—A small CAVITY behind the base of the internal Pterygoid process, and the FOSSA PTERYGOIDEA between the Pterygoid processes.

112 Those on each side the Processus Azygos constitute a portion of the Nares.

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113 The *Pituitary Gland* is situated in the *Sella Turcica.*

114 The *Carotid Arteries* occupy the *Furrows* at its sides.

115 The *Temporal Muscle* is in the *Temporal Depression.*

116 A *Nerve* from the Superior Maxillary to the Temporal Muscle, passes in the *Furrows* on the anterior edge of the Temporal depression.

117 In the *Depression* between the Temporal and the Pterygoid Processes, the *Pterygoideus Externus* is situated.

118 A *Middle Lobe* of the Brain rests on the internal cavity of each *Ala.*

119 An *Artery*, *Vein*, and *Nerve* pass to the Nares along the Furrow, internal to the Base of the Pterygoid Portion.

120 Part of the Eustachian Tube is situated in the *Cavity* behind the base of the Pterygoid Process.

121 The *Pterygoideus Internus* fills the *Pterygoid Fossa.*

122 The FORAMINA are *anteriorly* the OPENINGS of its Sinuses on each side of the Processus Azygos.—The FORAMINA OPTICA internal to its anterior Clinoid processes.—The FORAMINA Lacera placed between the Transverse Spinous Processes, and the roots of its Ala.—The FORAMINA Rotunda placed immediately below the former.—The FORAMINA OVALIA placed somewhat externally and posteriorly to the last.—The FORAMINA SPINOSA placed posteriorly to these, and the FORAMINA VIDIA which perforate the base of each Pterygoid portion from before backward.

123 The *Sphænoidal Sinuses* serve to increase the Tone of the Voice, and not to detain odour as Blumenbach has erroneously imagined.

124 The *Optic Nerves* and *Ophthalmic Arteries* pass through the *Foramina Optica.*

125 The *Third*, *Fourth*, *First Branch* of the *Fifth*, and the *Sixth Pair of Nerves*, except a *reflected twig* which forms the commencement of the great Sympathetic, enter the orbit through the *Foramina Lacera.*

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126 The *Second Branches of the Fifth Pair*, or the *Superior Maxillary Nerves* pass through the *Foramina Rotunda.*

127 The Foramina Ovalia transmit the *Third Branch of the Fifth Pair* or the *Inferior Maxillary.*

128 The *Spinous Artery* or *Arteria Meningea Media* to the Dura Mater passes through the Foramen Spinosum.

129 An *Artery* and *Vein* pass to the Nares and the *Vidian Nerve* enters the Cranium through the *Vidian Foramen.*

130 In the *Fœtus* this bone has no Sinuses, and is separable from the Ala.

131 It is *connected* to the Os Frontis, Os Ethmoides, Ossa Malarum, Ossa Palati, Ossa Maxillaria by the Sphœnoidal Suture, and to the Vomer by Schindylesis posteriorly to the Os Occipitis by Synostosis, and laterally to the Ossa Parietalia by its own Suture.

132 It forms some of the sides, and a considerable portion of the base of the Cranium, it supports the Middle Lobes of the Brain; it forms a part of the orbits; it transmits numerous Vessels, and Nerves, &c.

OS ETHMOIDES.

133 The Os Ethmoides is situated in the middle of the anterior part of the base of the Cranium.

134 It is somewhat cubical.

135 Consisting of a *Cribriform Lamella*, a *Nasal Lamella*, *two* Ossa *Plana*, *Cellulæ* and *two Ossa Turbinata.*

136 The *Cribriform* Lamella is situated horizontally in the base of the Cranium, the *Nasal Lamella* passes perpendicularly downward from the middle of it; the *Ossa Turbinata* are situated at a little distance from the Nasal Lamella; the *Cellulæ* are immediately external to the Ossa Turbinata: and the *Ossa Plana* are the most external of all.

137 The *Crista Galli* is the name given to the eminence which rises from the Cribriform Plate.

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138 Numerous holes, for the transmission of the Olfactory Nerve, pierce the Cribriform plate.

139 On the *Ossa Turbinata Superiora* are seen excessively numerous holes for the Expansion of the Olfactory Nerve.

140 In the *Ossa Plana* there are the *Foramina Orbitaria Interna*, the *anterior* of which transmits the Nasal Twig of the first branch of the fifth pair of Nerves, and a small branch of the Ophthalmic Artery, and the *posterior* merely a branch of the Artery.

141 It is *joined* to the Os Frontis, Ossa Nasi, Ossa Maxillaria Superiora, Ossa Palati, and Os Sphœnoides, by the Ethmoidal Suture, and to the Vomer by Schindylesis.

142 In a *Fœtus* of nine months, the Crista Galli, and Nasal Lamella not being ossified, the bone consists of two portions.

143 It supports the Anterior Lobes of the Brain, gives attachment to the Falx, transmits the Olfactory Nerves, and forms part of the Septum Nasi.

OS NASI.

144 The Os Nasi is placed in the arch of the Nose.

145 It is somewhat convex *externally*, concave *internally*, narrow at its *upper part*, narrower still in the *middle*, and broadest at the *base;* its *root* and *anterior edge* is thickest, the latter projecting inward to join the Septum, its *outer edges* superiorly are overloped by the Maxillary bones, and inferiorly overlope them; its *lower edges* are thin and irregular.

146 It is *connected superiorly* to the Frontal bone, by the Transverse Suture; *anteriorly* to its fellow by the perpendicular Nasal Harmonia; *externally* to the superior Maxillary bone by the Oblique Nasal Harmonia; *posteriorly* to the Septum Narium by Schindylesis; and *inferiorly* to the Cartilages of the Nose.

147 In the *Fœtus* it is proportionably shorter than in the Adult.

148 It covers and defends the Nares.

OS LACHRYMALE.

Answ.

149 The Os **Lachrymale** is placed at the Anterior edge of the inner side of the Orbit.

150 Its *external* side consists of a flat posterior surface and an anterior groove, its *internal* side is exactly the reverse.

151 The Lachrymal Sac is received into the *Groove.*

152 The Ball of the eye rests in part on the *Flat Surface.*

153 The Ethmoidal Cells are covered by its *internal Surface.*

154 It is *joined* to the Os Frontis, Os Ethmoides, and Os Maxillare by the Lachrymal Sutures.

155 In the *Fœtus*, this bone considerably resembles that of the Adult.

156 It forms part of the groove for the Lachrymal Sac and Duct, and also the Anterior part of the inner side of the Orbit.

OS MALÆ.

157 The Os **Malæ** forms the prominence of the cheek.

158 It is irregularly square.

159 The **Eminences** on this bone are its *Maxillary process*, or inferior angle, its *inferior orbitar process* or superior angle of the inner side, its *internal orbitar process* projecting inward from its upper part, its *external orbitar process*, or superior external angle, and its *Zygomatic process* or inferior external angle.

160 The Zygomatic Muscles arise from its outside.

161 The Aponeurosis is of the Temporal Muscle, is attached to its *Edge* between the Zygomatic and superior orbitar process.

162 The **Depressions** are the *Orbitar depression* in the *Orbitar* process and the *Temporal depression* behind the Zygomatic process.

163 The *Orbitar depression* contains part of the ball of the Eye, and the *Temporal depression* part of the Temporal Muscle.

164 It has only one *Foramen* placed below the middle of its upper edge, through which passes,

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165 A Nervous Twig.

166 It is *connected* at its *posterior inferior angle* to the Os Temporis by the Zygomatic Suture; at its *superior orbitar process* to the Os Frontis by the Transverse Suture; at its *internal orbitar process* to the orbital process of the Sphœnoid bone by part of the Sphœnoidal Suture; to the orbitar process of the Os Maxillare by the internal orbitar Suture; and at its *anterior edge* to the same bone by the external orbitar Suture.

167 It is fully Ossified in a nine months *Fœtus*.

168 It forms the prominence of the Cheek and part of the Orbit, protects the Temporal Muscle, and gives attachment to its Aponeurosis.

OS MAXILLARE SUPERIUS.

169 The Os Maxillare Superius is placed at the anterior inferior part of the upper Maxilla.

170 It is very irregular.

171 Its Eminences are seven in number, viz. the *Alveolar Process* at its inferior edge, the *Palatine Process* projecting backward and inward from above the Alveolar Process, the *Spinous Process* rising from the inner edge of the Palatine, the *Nasal Process* ascending from the anterior part of the Alveolar, the *Bulbous Process* situated behind the Nasal, the *Orbitar Process* which forms the upper part of the Bulbous, and the *Malar Process* which is placed at its outer side.

172 The Teeth are contained in the holes of the *Alveolar Process.*

173 The *Palatine Process* forms the floor of the Nares, and the arch of the Palate.

174 The lower edge of the Septum Narium is fixed to the *Spinous Process.*

175 A *groove* on the outer side of the Nasal Process forms, with the groove of the Lachrymal bone, a Cavity which contains the Lachrymal Sac.

176 The Pterygoideus Externus arises from the posterior part of the *Bulbous Tuberosity.*

177 From the anterior inner edge of the *Orbitar process*, the inferior Oblique Muscle of the Eye arises.

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178 The Depressions are seven in number, viz. the *Palatine depression* on the lower side of the Palatine Process, the *Nasal depression* on its upper side, a *small depression* on the forepart of the Alveolar process, a *more considerable* one between the Alveolar and Malar Processes, the *Temporal depression* placed behind the Malar Process, the *Orbitar depression* of the Orbitar Process, and the *Lachrymal depression* on the posterior part of the Nasal Process.

179 The *Depressor Labii Superioris* is fixed to the anterior part of the *Alveolar Process.*

180 The *Levator Labiorum Communis* and Levator Labii Superioris arise from the Depression between the Alveolar and Malar Processes.

181 The Temporal Muscle is situated in the *Temporal Depression.*

182 The Foramina are four in number, *two proper and two common*, viz. the *Infra Orbitary Foramen* below the anterior inferior edge of the orbit, being the opening of a Canal which passes forward under the Orbitar Process; the *Foramen Incisivum*, placed behind the inner Incisor Tooth joining its fellow at the other side inferiorly, but being distinct from it superiorly; the *Sphæno-Maxillary Fissure* at the outer side of the Orbit, and the *Palatine Foramen*, common to this and the Palate Bone, and formed by a Fossa on the inner side of the back of the Bulbous Process, and another in the Nasal and Palatine Plates; and lastly, the *opening* of the Antrum Maxillare between the two Turbinated bones.

183 A *branch* of the *second* branch of the fifth pair of Nerves, and a branch of the *Internal Maxillary* Artery, pass through the *Infra Orbitary Foramen.*

184 A *small Artery*, *Vein* and *Nerve* pass through the *Foramen Incisivum.*

185 Twigs of *Arteries*, *Veins* and *Nerves* are transmitted by the *Sphæno-Maxillary Foramen.*

186 The *Palatine Artery* and Nerve are placed in the *Palatine Foramen.*

187 In the *Fœtal State*, the Bulbous and Palatine Pro-

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cesses are imperfect; some months before birth the rudiments of the first set of teeth are distinctly formed.

188 It is *joined*, by the *tip* of its Nasal Process to the Os Frontis by the Transverse Suture; by the *side* of the Nasal Process to the Os Unguis by the Lachrymal Suture; by the *anterior edge* of the Nasal Process to the Os Nasi by the oblique Nasal Suture; by the *Malar Process* to the Os Malæ, by the *external Orbitar Suture;* by its *Orbitar Process* to the Os Malæ, by the Internal Orbital Suture; by the same process to the Ethmoid Bone, by the Ethmoid Suture: by its *Bulbous Process* to the Os Palati, by the Maxillo-Palatine Suture; by its *Palatine Process* to the Palate Bone, by the Transverse Palatine Suture; by its *Spinous Process* the Vomer, by Schindylesis; by the *sockets* in the Alveolar Process to the Teeth, by Gomphosis; by its *Palatine Process* to its fellow, by the Longitudinal Palatine Suture; above the middle Incisor Teeth to its fellow, by the Mystachial Suture; and to the Inferior Turbinated Bone, by the Transverse Nasal Suture.

189 It forms a great part of the upper Maxilla, composes a part of the Orbit, Nose and Palate, gives origin to various Muscles, and transmissions to Nerves, Arteries, and Veins.

OS PALATI.

190 The Os **Palati** is *placed* at the Posterior part of the Orbit, Nares and Palate.

191 It is *divided* into four portions, namely, its *Palatine, Pterygoid, Nasal*, and *Orbitar Processes.*

192 The *Palatine Process* is placed at the posterior part of the Arch of the Palate.

193 The *Nasal Lamella* is placed posteriorly and externally to the former.

194 The *Pterygoid Process* ascends from the outer edge of its Palatine Portion.

195 The *Posterior Orbitar Process* is connected to the base of the Sphœnoid bone, and the *Anterior* one

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is placed at the back of the lower side of the Orbit.

196 The EMINENCES on this bone are its *Spinous Process* rising from the inner edge of the Palatine Process, and a *Transverse Ridge on the inside* of its Nasal Portion.

197 Part of the edge of the *Vomer* is attached to the upper edge of the Spinous Process.

198 The *Azygos Uvulæ* to its posterior end.

199 The *Velum Pendulum Palati* to the posterior edge of the Palatine Portion.

200 The posterior end of the Inferior Turbinated Bone rests on the *Transverse Ridge* on the inside of the Nasal Lamella.

201 The DEPRESSIONS are *one* on the upper part of the Palatine Portion for the Nares, *another* on its lower part for the Palate, and *three* upon the Posterior part of the Pterygoid Portion, of which the *Lateral ones* receive the Pterygoid Processes of the Sphœnoid Bone, and the *middle one* contributes to form the Fossa Pterygoidea.

202 Besides the *Foramen*, properly called *Palatine*, and common to this bone with the superior Maxillary, there are *several smaller ones* which pass upward to join it.

203 In a nine months *Fœtus* its form is considerably perfect.

204 It is *connected*, by the Anterior edge of its Palatine portion to the Os Maxillare Superius, by the Transverse Palatine Suture; by its Nasal and Anterior Orbitar Process to the same bone, by the Maxillo-Palatine Suture; by its Pterygoid Process, and the back of its Nasal Portion to the Pterygoid Portion of the Sphœnoid bone, by the Sphœnoid Suture; by its Orbitar Process to the Ethmoid bone, by the Ethmoidal Suture; by the Transverse ridge of its Nasal Portion to the Inferior Turbinated bone, by the Transverse Nasal Suture; by its Orbitar Process to the body of the Sphœnoid bone, by the Sphœnoidal Suture; by the Internal edges of its Palatine Portion to its fellow, by the Longitudinal Palatine Suture; and

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by its Spinous Process to the Vomer, by Schindylesis.

205 It forms part of the Orbits, Nares, and Palate, and of the Sphœnoidal, Ethmoidal, and Maxillary Sinuses.

OS TURBINATUM INFERIUS.

206 THE INFERIOR TURBINATED BONE is *placed* on the inner side of the Nares.

207 It somewhat resembles the superior one, but from its anterior part a *small plate* ascends to form part of the Lachrymal Duct, and from its posterior part *another* descends to cover a part of the Antrum Highmorianum.

208 In the *Fœtus* it considerably resembles its Adult state.

209 It is *joined* to the Os Lachrymale, Os Maxillare, and Os Palati by the Transverse Nasal Suture.

210 Its *use* is to give expansion to Nerves, and partly to form the Antrum and Lachrymal Duct.

VOMER.

211 THE VOMER is placed in the middle of the Nares and forms the posterior inferior part of the Septum.

212 It is irregularly Rhomboidal, consisting of *two Lamellæ* which leave a *Canal* along its middle, and its posterior superior part is thickest.

213 In a *Fœtus* of nine months its Lamellæ are separated by Cartilage.

214 It is *connected* by its *anterior edge* to the Cartilage of the Septum by its *inferior edge*, to the Spinous Processes of the Maxillary and Palate Bones by Schindylesis, by its *upper edge* to the Nasal Lamellæ of the Ethmoid and Processus Azygos of the Sphœnoid Bone also by Schindylesis.

215 Its chief *uses* are to divide the Nares and permit the expansion of the Olfactory Nerve.

OS MAXILLARE INFERIUS.

Answ.

216 It is *placed* at the lower part of the face.

217 It is *divided* into the *Chin*, limited by the two anterior Foramina; the *sides*, extending backward from the Foramina; the *angles*, in which the sides terminate and the *Rami*, which ascend from the angles,

218 Its EMINENCES are the *Condyloid Process*, which is the Posterior of the two arising from each Ramus; the *Coronoid Process* which is the anterior one; a *protuberance* on the outer, and *another* on the inner side of each angle; a *ridge* passing externally, and *another* internally from the base of the Coronoid Process to the commencement of the Chin; a *protuberance* immediately behind the Symphysis of the Jaw; and *another* on each side the base of the chin.

219 The *Temporal Muscles* are attached to the inner side of the *Coronoid Processes.*

220 The *Masseter Muscles* are attached to the outer side of its *angles.*

221 The *Internal Pterygoid* Muscles to the inner side of its *angles.*

222 The *Mylo-Hyoideus* to the *internal line* from the coronoid process to the Chin.

223 The *Buccinator* to the external line in the same direction.

224 The *Frenum* of the Tongue superiorly, the *Genio-Hyoidei* inferiorly, and the *Genio-Glossi* between these, are fixed to the *protuberance* immediately behind the Symphisis of the lower Jaw.

225 The *Depressores Anguli Oris et Labii Inferioris* are attached to the projections at the anterior part of the base of the Chin.

226 There is ONE DEPRESSION immediately before each Condyloid Process, *another* on each side of the anterior surface of the Chin, and *two* on the base of the Chin.

227 The *Pterygoideus Externus* is fixed immediately before the Condyle.

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228 The *Depressores* and *Lavatores Labii Inferioris* are attached to the anterior surface of the Chin.

229 The *Digastrici* to the depression on the base of the Chin.

230 There are two Foramina *in this bone* on each side, *one* being placed externally and anteriorly called the *Mental Foramen;* the *other* internally and posteriorly; they are openings of one Canal.

231 The inferior Maxillary Artery and Vein, and a branch of the third branch of the fifth pair of Nerves to the teeth enter the bone at the posterior and internal hole; the *Mental Foramen* transmits some of their branches to the Chin.

232 In the *Small Canal* on the inner side of the posterior Foramen, a branch of Nerve passes to the Sublingual Gland and Mylo-Hyoideus.

233 In the *Fœtal State* it is *divided* in two at the Chin by a thin Cartilage, hence this part has been called the *Symphisis.* As in the upper Jaw, the rudiments of the first set of teeth are distinctly formed.

234 It is *articulated* by its Condyloid Processes, to the Temporal bone.

235 It is of *much use* in *Mastication, Deglutition,* and *Speech.*

THE TEETH.

236 There are *Thirty-two* Teeth in the Adult.

237 *Situated* in the Alveolar Processes of the Jaws.

238 They consist of *two substances, one internal* and *bony,* and another *external* and very hard, called *Enamel.*

239 Upon the *tops* of the teeth the Enamel is formed thickest.

240 The *Fibres* of the Enamel are disposed as Radii from the centre of each Tooth.

241 The *Fibres of the bony part are* generally arranged in a perpendicular direction.

242 Each *Tooth* is divided into a large portion external to the Socket, called its *Corona,* into a narrow part below this called its *neck,* and one, two, or three processes proceeding from the Neck, called the *roots.*

Answ.

243 The *Fangs*, *Neck*, and *Corona* of each tooth are hollow and contain,

244 A branch of an Artery, Vein and Nerve.

245 The *Teeth* are arranged in three classes, namely *Incisivi*, *Canini*, and *Molares*.

246 There are *eight* incisores, four in the front of each Jaw.

247 They somewhat resemble wedges, having a sharp cutting edge.

248 The two middle ones are the largest in the upper Jaw.

249 The lateral ones in the lower Jaw.

250 The *Canini* are placed on each side of the Incisores.

251 They are *Four* in number.

252 They are larger than the Incisores and pointed.

253 The *Molares* are the Teeth placed behind the Incisores.

254 Their number is *Twenty*.

255 The two Anterior on each side of both Jaws are called *Bicuspides*.

256 These have a double pointed Corona, and have one or two Fangs.

257 The Posterior Molares, one on each side of both Jaws, are called *Dentes Sapientiæ*.

258 They have a *large irregular Corona* and fewer Fangs than the other Molares.

259 The third and fourth Molares have a *large Corona*, and in the *lower Jaw* have *two*, in the *upper three roots*.

260 The *Commencement of the formation of Teeth is by small pulpy* substances placed in the Alveolar processes of the Jaws.

261 About the fourth month of the *fœtal state* the *pulps* are discernible.

262 They are firm, semitransparent, and supplied with numerous vessels.

263 They are invested by thin *Capsules*.

264 These may be easily separated into *two layers*, of which the external is vascular and spongy.

265 A small portion of fluid is interposed between the *Capsule* and *Pulp*.

Answ.

266 *Ossification* commences on the Pulps at the eighth month;

267 In *one* or *more* points.

268 The Capsule adheres to the neck of each Tooth, and forms

269 *The Enamel.*

270 *Twenty* Teeth form the first set, viz.

271 *Eight Incisivi*, *four Canine*, and *eight Molares.*

272 They begin to appear through the Gums usually about the age of six months, and are completed at two years old.

273 About seven years of age they begin to be shed.

274 About fourteen years of age this process is completed.

275 *The Shedding* is effected by the absorption of the Fangs of the first set, and of their Sockets.

276 The Teeth are *articulated* to the Alveolar processes of the Jaws.

277 They are the direct instruments of Mastication, and are of essential use in pronunciation.

OS HYOIDES.

278 The *Os Hyoides* is placed horizontally between the root of the Tongue and the upper part of the Larynx.

279 It is divided into a *Body*, *two Cornua*, and *two Appendices.*

280 Its *Body* is horizontally somewhat *oblong*, *convex anteriorly*, and *concave posteriorly*, its anterior convexity being divided by a middle horizontal ridge.

281 The *Genio-Hyoides*, and the *Bassio-Glossi*, are inserted into the space above the ridge, the *Mylo-Hyoidei* and *Stylo-Hyoidei* into the ridge itself, and the *Sterno-Hyoidei* and *Coraco-Hyoidei* into the space below the ridge. The *Membranes* and *Ligaments* of the Tongue, Epiglottis and Thyroid Cartilage are fixed to its upper edge.

282 The *Cornua* are placed outward and backward from the body.

283 They have two flat sides which slope from above outward and downward; they diminish as they

Answ.

proceed backward, and terminate in round Tubercles.

284 The *Cerato-Glossus* arises from the external surface of each cornu, and the *Hyo-Thyroideus* from its under edge. The *Membranes* of the Tongue and Larynx adhere to its posterior side, and *from the Tubercle* at the end of each a *Ligament* proceeds to the Cornua of the Os Hyoides.

285 The *Appendices* project upward from the *junction* of the *body* with the *Cornua*, and give attachment to

286 The *Stylo-Hyoidei Alteri*, the *Condro-Glossi*, and a *Ligament* to the Os Hyoides.

287 Except a *point* in the middle of its body, it is wholly Cartilaginous in the *fœtal state*.

288 It is *connected* to the Styloid Processes, and Thyroid Cartilage by Ligaments.

289 It forms a solid point for the insertion and action of the Muscles of the Organs of Speech and Deglutition.

SECTION VII.

OF THE BONES OF THE TRUNK.

1 The Trunk of the Skeleton is divided into the *Spine*, *Thorax*, and *Pelvis*.

BONES OF THE SPINE.

VERTEBRÆ.

2 The Spine is situated along the posterior part of the Trunk.

3 It resembles a long, slender Pyramid, formed of a long chain of Bones superiorly, and a short one inferiorly, joined by their bases.

4 It is divided into the *Vertebræ*, *Os Sacrum*, and *Os Coccygis*.

5 There are twenty-four *true Vertebræ*.

6 These are subdivided into *three classes*, namely, into those of the Neck, or *Cervical;* those of the Back, or *Dorsal;* and those of the Loins or *Lumbar Vertebræ*.

Answ.

7 Each Vertebra has a *body*, a *bony ring*, and *seven processes.*

8 *The Body* is placed anteriorly, and represents a portion of a Cylinder cut transversely, which is somewhat round anteriorly, and sloped posteriorly.

9 Each Vertebra has *seven Processes;*

10 *Four* of them are *oblique*, or *articular*, consisting of *two superior*, and *two inferior; three* serve the purpose of muscular attachment, of which *two*, from their situation, are called *transverse*, and *one spinous.*

11 *The Ring* is situated immediately behind the body, and within the processes.

12 The *Vertebral Canal* is formed by their conjunction.

13 The *oblique*, or *articular Processes* are situated above and below the posterior part of the body.

14 The *Transverse Processes* are situated at the sides of the Ring.

15 The *Spinous Processes* at the back of the Ring.

16 On each side, between the Body and Ring, there are *Notches*, two being situated superiorly, and two inferiorly.

17 When two Vertebræ are joined, these notches form *holes* which serve to transmit the Intercostal Nerves.

18 The Vertebræ are of a spongy texture.

19 They are *connected* to each other by their bodies and by their articular processes.

CERVICAL VERTEBRÆ.

20 *The Body* of a Vertebra of the Neck is flatted anteriorly, and is thinner than the other Vertebræ; its upper side is concave from side to side, and its lower hollowed from before backward.

21 The *Spinous Processes* are more straight and forked at the extremity.

22 The *Transverse Processes* are very short, slightly bifurcated and perforated perpendicularly at their bases, they are also grooved in the upper side.

23 The *Oblique Processes* are more oblique, their cartilaginous sides in the *upper ones* being turned backward and upward, in the *inferior ones* forward and downward.

ATLAS.

Answ.

24 The first Vertebra is called Atlas.

25 It has no Body nor Spinous Process.

26 Its *Ring* is much larger than those of the rest.

27 It has an *anterior* and a *posterior arch.*

28 To the posterior side of its anterior arch the toothlike Process of the second Vertebra is united.

29 Its *Transverse Processes* are longer than those of the rest, and terminate in an obtuse point.

30 The *Superior Articular Processes* are larger than the rest, and form oblong horizontal Cavities, of which the anterior extremities are nearest.

31 The *Inferior Articular Processes* are round, broad, and sloped inward.

32 A *long groove* is seen immediately behind the Superior Articular Process.

33 The *Transverse Ligament* of the toothlike Process is fixed to a Tuberosity on the inner side of its anterior arch.

34 Its *Lateral Ligaments* are fixed to the inner side of the arch, external to the Transverse Ligament.

35 The *Second Cervical Vertebra* is called *Vertebra Dentata.*

36 *Its Body* is narrower and longer, and has upon its upper part a pivot, or axis, called *Odontoides*, or *Dens.*

37 The posterior part of the *Processus Odontoides* is marked by its Transverse Ligament.

38 From its *Apex* the perpendicular Ligament arises.

39 Nearly from its Apex, on each side of the perpendicular Ligament, arise the *lateral Ligaments.*

40 Its *Spinous Process* is short, broad, and much forked, its lower side is hollowed by an angular cavity, and divided into two lateral parts by a bony line.

41 Its *Transverse Processes* are very short, slightly turned downward, and perforated obliquely.

42 Its *Superior Articular Processes* are very large, a little convex, placed nearly horizontally on each side of the toothlike Process.

LAST CERVICAL VERTEBRA.

Answ.

43 The *Body* of the LAST CERVICAL VERTEBRA is the largest of this Class; its lower side is nearly flat.

44 Its *Spinous Process* is larger than those of the rest.

45 Its *Transverse Processes* are longer, placed farther back, and less grooved; their Foramina also are sometimes double.

DORSAL VERTEBRÆ.

46 The *Bodies of the* DORSAL VERTEBRÆ are the most convex anteriorly, their upper and lower surfaces are nearly flat, and on each side there are two little articular surfaces, one above and one below to receive the heads of the Ribs.

47 The *Spinous Processes* are long and sharp superiorly; slightly hollowed inferiorly, and considerably inclined downward.

48 The *Articular Processes* are placed almost directly above and below the Transverse, and are perpendicular rather than oblique; the sides of the superior ones are slightly convex and turned backward, those of the inferior the reverse.

49 The *Transverse Processes* are directed obliquely backwards and downwards, they are pretty long superiorly, but diminish as they descend, those of the twelfth being very small; the anterior part of their tips are Cartilaginous and receive the Tubercles of the Ribs; these depressions diminish as they descend, and do not exist in the two last.

50 *The Rings* become rounder and narrower as they descend from the first to the tenth, where they again begin to be more flat.

51 The *four first* are somewhat flatted anteriorly.

52 Of the *last two* the Transverse Processes have no articular depression.

LUMBAR VERTEBRÆ.

53 The *Bodies* of the LUMBAR VERTEBRÆ are by much the largest, they are somewhat contracted about the middle, and their edges are prominent.

Answ.

54 The *Spinous Processes* are short, straight, and broad on each side, but narrow above and below, that of the last being shorter and narrower than that of the rest.

55 The *Transverse Processes* are longer and more slender, being flatted anteriorly and posteriorly; they increase in length from the first to the third, then diminish to the fifth.

56 The *Superior Articular Processes* are concave lengthwise, the *inferior* convex lengthwise, and nearer each other than the superior, their convex articulating surfaces being turned outward from each other.

57 *The Rings* are flatted anteriorly, and angular posteriorly.

OS SACRUM.

58 The *Os Sacrum* is placed at the posterior and lower part of the Trunk, below the true Vertebræ.

59 It resembles a Pyramid with the *basis* upward, and *apex* downward; having an *anterior*, or concave side; a *posterior*, or convex one, and *two edges.*

60 It consists of *five portions*, the points of separation between which are marked by prominent lines in the adult.

61 Immediately behind its body is a *small Canal*, the form of which

62 Is triangular.

63 Four pairs of holes open anteriorly from it.

64 And posteriorly the same number as anteriorly.

65 The great *Sacral Nerves* pass out through the Anterior Foramina.

66 It has *two articular Processes* placed at its base, immediately behind its body.

67 The *lateral parts* are large and broad superiorly; they form an uneven narrow surface as they descend.

68 They have on each side a large articulating surface for its union with the Ossa Innominata.

69 It is *connected laterally* to the Ossa Innominata, *superiorly* to the last Lumbar Vertebra, and *inferiorly* to the Os Coccygis.

OS COCCYGIS.

Answ.

70 The Os Coccygis is placed immediately below the Os Sacrum.

71 In *form* it considerably resembles the Os Sacrum.

72 It consists of four or five pieces.

73 It has *two Processes*, one on each side of its upper portion which have been called its *Cornua or Shoulders.*

BONES OF THE THORAX.

74 The Thorax consists of the *Dorsal Vertebræ* posteriorly, *the Ribs* laterally, and *Sternum* anteriorly.

RIBS.

75 The Ribs are placed transversely and obliquely on each side of the Thorax.

76 They are bony arches of different sizes.

77 *Twenty-four* in number, *twelve* on each side.

78 They are divided into two classes, viz. the *true* and the *false* Ribs.

79 The *Seven Superior Ribs* are called *True*, the *Five Inferior*, *False.*

80 Each Rib is divided into the *middle part* or *body*, an *anterior* and a *posterior extremity*, the *external or convex*, and the *internal or concave side*, a *superior* and an *inferior edge.*

81 The *posterior extremity* of the Rib which is turned toward the Vertebræ, is called the *Head.*

82 Immediately below the head, the *Neck* is situated.

83 At a little distance from the head on the posterior side of the Rib, an articular eminence called the *Tubercle*, is seen.

84 At a little distance from the Tubercle, the bone forms a sudden bend called the *Angle.*

85 Its *superior edge* is rounded.

86 The *Inferior edge* is sharp, owing to a *groove* which runs along its inside and contains

87 The Intercostal, Artery, Vein and Nerve.

88 *This Groove* is most strongly marked about the middle, because at the head of the Rib the Vessels have

Answ.

not yet joined it, and at its anterior extremity they have separated from it.

89 The *Head* in general has two Cartilaginous surfaces to articulate with the little cavities formed by the union of the Dorsal Vertebræ with each other.

90 A *cartilaginous surface* is seen on each *Tubercle*, by which it is joined

91 To the *transverse process* of the *Vertebræ* above it.

92 In the first *Rib* the angle is not distinct from the Tubercle; in the *second*, it is at a small distance, and thence continues to increase to the *third false rib.*

93 The *anterior ends* of the true Ribs are generally enlarged, *those of the inferior false ribs* generally diminish, and both have a small concave depression to receive their *Cartilaginous Elongations.*

94 They increase in length as they descend to the seventh or eighth.

95 The *anterior extremity* of each Rib is *lower* than the posterior.

96 The back part of each Rib is most curved.

97 The *third false Rib* and those immediately above it are most contorted.

98 The *Anterior Extremities of the False Ribs* are considerably the smallest.

99 The *First Rib* differs from the rest, in being placed horizontally, in having its head connected only to one Vertebra; having no groove on its inferior edge, and being directly connected to the Sternum.

100 The two last have their *heads* connected each to one Vertebra only; they have no connexion with the transverse processes, and no groove on their inferior edge.

101 The *Superior Ribs* have the shortest Cartilages.

102 The *last true* and *first false Ribs* have the longest Cartilages.

103 The *Cartilages* all bend forward, inward, and upward.

104 The *seven true Ribs* have their Cartilages fastened directly to the Sternum.

105 The Cartilages of the *three superior false Ribs* rest on those of the Ribs above merely.

106 The anterior extremities of the two *inferior false*

Answ.

Ribs are unconnected, and on this account they have been called *floating Ribs.*

STERNUM.

107 The Sternum forms the anterior and middle part of the Thorax.

108 It somewhat resembles a dagger.

109 It consists of *three portions.*

110 The *Superior Portion* is broad and thick superiorly, thinner and narrower below, nearly resembling a triangle with the three angles cut off.

111 The *Superior Edge* of the *upper portion* is excavated to admit the trachea in great flexions of the head.

112 Its *Superior Angles* are depressed to receive the Clavicles.

113 Each of the *lateral edges* have one depression and a half, to lodge the anterior extremity of the first, and half of the second rib.

114 The *Second Portion* is flatter on both sides and broader below than above.

115 Part of the *Pectoral Muscle* is attached to the outside of the middle portion;

116 The *Mediastinum* and *Triangularis Sterni* to its inside.

117 Five whole and two half depressions, are seen on each side of the middle portion;

118 These lodge half the anterior extremity of the second, all the third, fourth, fifth, sixth, and half the seventh.

119 The *Third Portion* is somewhat Cordiform.

120 At the upper part of each edge there is a half depression for the seventh rib.

121 Its *Structure* is cellular.

BONES OF THE PELVIS.

122 The Pelvis is situated at the lower part of the Trunk.

123 It represents a kind of a *Bason* of no regular figure.

124 It is formed by the *Os Sacrum* posteriorly, *Os Coccygis* inferiorly, and *Ossa Innominata* at its lateral and anterior parts.

Answ.

125 Each *Os Innominatum* is divided into *three portions*, namely the *Os Ilium*, *Os Pubis*, and *Os Ischium;* these are considered as separate bones, on account of their being easily separable in young subjects.

OS ILIUM.

126 The Os Ilium forms the broad expanded superior part of the Os Innominatum.

127 It is of a *triangular figure*, its broad, flat sides are unequally convex and concave.

128 It is divided into the *Crista*, *basis*, *anterior* and *posterior*, and *external* and *internal sides*.

129 The *Crista* forms the upper thick edge of the Os Ilium, which is divided into

130 Its *external* and its *internal Labium*.

131 The angular terminations of the Crista, are called the *anterior superior*, and *posterior superior Spinous processes* of the Os Ilium.

132 *Fallopius's* or *Poupart's Ligament*, and the *Sartorius Muscle* are attached to the anterior superior spinous Process.

133 About an inch below the anterior and at the same distance below the posterior superior processes are situated the *anterior inferior* and *posterior superior spinous processes.*

134 Its *basis* or *inferior portion* is the narrowest and thickest part.

135 The Ilium contributes to form the *great Sacro-Ischiatic* notch posteriorly.

136 *The Base* forms part of the *Acetabulum*, or great Articular Cavity of the Os Innominatum, towards which

137 It contributes somewhat less than two-fifths.

138 The Aponeurosis *Fascia Lata*, the *Latissimus dorsi*, and *Obliquus externus Abdominis* are attached to the *External Labium* of the Crista, and posteriorly to the *Gluteus Maximus.*

139 The *Gluteus Medius*, occupies the space between the Crista, the attachment of the Gluteus Maximus and the great curved line, which extends on the Dorsum Ilii from the anterior superior spinous process to the Sciatic Notch.

Answ.

140 The *Gluteus Minimus* is fixed to the space between the great curved line and the Acetabulum.

141 The *Iliacus Internus* is attached to the hollow on the inside of the bone.

142 There are *two Articular* surfaces corresponding to those of the Sacrum, at the posterior and internal part of the Ilium.

143 *A smooth Ridge* which traverses the inner side of the base of this bone, forms part of the brim of the Pelvis, and distinguishes the cavity of the Pelvis from that of the Abdomen.

OS ISCHIUM.

144 THE OS ISCHIUM is situated at the *lowest part* of the Os Innominatum.

145 It is divided into a *Body*, a *Tuberosity*, and a *Ramus*.

146 From the posterior part of the body, its *Spinous Process* projects, to which are attached

147 The *lessor Sacro-Ischiatic Ligament*, and the *Coccygeus* internally.

148 The *Tuberosity* is situated at the lower and posterior part of the body, where the Ramus joins it.

149 From the *Tuberosity* arise the *Quadratus Femoris* externally, the *Semimembranosus Semitendinosus* and *Biceps* about its middle part, the great head of the *Triceps* from its inferior part, the greater *Sacro-Ischiatic Ligament* is also attached to its inner part.

150 The *Ramus* ascends forward from the Tuberosity.

151 By a very considerable *Notch* anteriorly it contributes to form the *Obturator Foramen*. *A Notch* posteriorly between the Tuberosity and Spine for the *Obturator Muscle*, one *Laterally* between the Tuberosity and Acetabulum for the *Obturator Externus*, and *one anteriorly* at the edge of the Acetabulum for Ligaments, Vessels, and Fat are also noticed.

OS PUBIS.

Answ.

152 The Os Pubis is situated at the anterior part of the Pelvis.

153 It is divided into its *body*, *angle* and *branch*.

154 *Its body* forms its upper part, situated before the base of the Os Ilium.

155 It contributes *one-fifth* to the formation of the *acetabulum.*

156 A *line* on the inner side of its body, forms part of the brim of the Pelvis.

157 The *Spine* is situated about an inch from the angle;

158 It gives *attachment* to *Poupart's Ligament*, and in part to the *Rectus* and *Pyramidalis* abdominis.

159 This bone forms part of the *Obturator Foramen.*

160 *Its angle* is situated anteriorly formed by the junction of the Body and Ramus.

161 *The Ramus* descends from its angle.

ACETABULUM.

162 One-fifth of the *Acetabulum* is formed by the *Os Pubis;* rather more than two-fifths by the *Os Ischium*, and less than *two-fifths* by the *Os Ilium.*

163 The upper part of *its brim* is most prominent.

164 Between its middle and its inferior Notch it is denuded of Cartilage;

165 This part contains a *Ligament* and Synovial Glands.

166 Toward its lower part there is a *notch*, which serves

167 To transmit certain Vessels, &c.

168 The *Os Innominatum* is connected Posteriorly to the *Os Sacrum;* Anteriorly to its *fellow*, forming the *Symphisis Pubis;* and Laterally and Inferiorly to the *thigh bone.*

SECTION VIII.

OF THE BONES OF THE UPPER EXTREMITIES.

1 The Bones of the *Upper Extremities* are divided into four Classes, namely, those of the *Shoulder*, the *Arm*, the *Fore-arm*, and the *Hand.*

BONES OF THE SHOULDER.

Answ.

2 The Shoulder consists of two, namely, the *Scapula,* and *Clavicle.*

SCAPULA.

3 The Scapula is placed laterally at the upper and posterior part of the Thorax, from about the first to the seventh Rib.

4 It is somewhat *triangular.*

5 Its Regions are an *external or posterior* and convex side; an *internal or anterior* and concave side; three edges, of which *one* is named the *basis;* and *two Costæ,* a *superior* and *inferior; three angles,* one *anterior called the Neck,* one *superior,* and one *inferior.*

6 The *Base* is the longest and thin edge turned towards the Spine; its upper part being nearer the Vertebræ than the lower.

7 The *Superior Costa* is situated almost transversely between the superior point of the base and the neck of the Scapula, being most raised toward the base.

8 At the Anterior part of the Superior Costa, a *Notch* may be seen.

9 The Supra Scapular Vessels and Nerves pass through it.

10 The *Inferior Costa* is situated obliquely between the inferior point of the base and the Neck of the Scapula.

11 Its inferior edge or Costa is by much the thickest.

12 *The Neck* forms the anterior angle, and is surmounted,

13 By a *Glenoid Cavity.*

14 The *Coracoid Process* rises immediately behind and above the neck.

15 The Coraco-Clavicular and Coraco-Acromial ligaments are attached to this process and its Tuberosity.

16 Three Muscles arise from its *Tip,* namely, the *Pectoralis minor* internally, the *Coraco-Brachialis,* and the *short head of the Biceps.*

Answ.

17 The *long head of the Biceps* arises from above the Glenoid Cavity.

18 The *Dorsum of the Scapula* is unequally convex, divided into two by

19 The *Spine* of the *Scapula*, a large process rising from the Dorsum.

20 The *Trapezius* is attached to the superior edge of this Spine.

21 The *Deltoid* to its inferior edge.

22 The *Acromion* is the name given to the most projecting part of the *Spine;*

23 It is *broad* and *flat.*

24 The *Scapular end of the Clavicle* is articulated with its *upper edge* near its Apex.

25 The *Deltoid* arises from its *inferior and anterior edge.*

26 The Spine divides the Dorsum *Scapulæ* into the *Supra-Spinal* and *Infra-Spinal Fossæ.*

27 The *Infra Spinal* Fossa is the largest.

28 The *Supra-Spinatus* occupies the Supra-Spinal Fossa.

29 The *Infra-Spinatus* is fixed in the Infra-Spinal Fossa.

30 The *Teres Minor* arises from the *Groove* on the *inferior Costa.*

31 The *Teres Major* arises from the *flat surface* on the outside of the *inferior angle.*

32 The *Latissimus Dorsi* only passes over this angle.

33 The *Inner Side* of this Bone is irregularly *concave.*

34 The *Subscapularis Muscle* is lodged in it.

35 The thicker parts of this bone possess a *Diploe*, the *thin parts* have not any, and are transparent.

36 It is connected to the *Clavicle* by the Acromion, and to the *Os Humeri* by the Glenoid Cavity.

CLAVICLE.

37 The Clavicle is placed transversely and somewhat obliquely at the upper and anterior part of the Thorax, between the Scapula and the Sternum.

38 It has a considerable resemblance to an Italic *ſ*.

39 It is divided into a *body* and an *internal* or Sternal. and an *external* or Scapular *Extremity.*

Answ.

40 Its *Sternal Extremity* is somewhat triangular; into its *posterior angle* is fixed

41 The *Inter clavicular Ligament.*

42 The *Tubercle*, at the posterior part, near the Scapular Extremity, is connected by a Strong Ligament, with the *Coracoid process* of the Scapula.

43 The *Scapular Extremity* is *flat* and *broad;* from its anterior edge arises

44 The *Deltoid*, whilst

45 The *Trapezius* is attached to its posterior edge.

46 The *Pectoralis Major* is attached to the *anterior edge* of the inner half of the Clavicle.

47 The *Subclavius* arises from the underside of the bone.

48 Its *extremities* are cellular, while its *middle*, having thick sides, possesses a *narrow Cavity*, filled with bony Filaments.

49 It is connected *internally* to the first bone of the Sternum, and *externally* to the Acromion.

OS HUMERI.

50 The Os Humeri is placed under the Acromion, along the side of the Thorax.

51 It is irregularly cylindrical.

52 Divided into a *body*, a *superior* and *inferior extremity.*

53 Its *upper Extremity* is formed by a smooth round head, inclined obliquely inward.

54 *Externally* and somewhat *inferiorly* to the head there are two *rough Tuberosities.*

55 *One* called the *internal* or *small*, the other, the *external* or *great Tuberosity.*

56 The *Subscapularis* is inserted into the internal Tuberosity.

57 The *Supra-Spinatus*, *Infra-Spinatus*, and *Teres Minor*, are inserted into the *external Tuberosity.*

58 A *considerable groove* separates these Tuberosities which receives

59 The *tendon* of the *long head of the Biceps.*

60 The slight circular depression immediately below its head, is called the *Neck.*

Answ.

61 The *internal head* of the Triceps begins at the posterior part of the Neck.

62 The *Pectoralis Major* is attached to the external *ridge;* and

63 The *Latissimus Dorsi* and *Teres Major* to the *internal* Ridge of the Bicipital Groove.

64 The *Deltoid* is attached to the *great rough muscular mark*, five inches below the *external Tuberosity.*

65 The *Coraco-Brachialis* is attached to a *ridge* on the inner side of the middle of the bone.

66 The *Medullary Artery* enters about the middle of the anterior side of the bone, and slants downward.

67 *The lower extremity* becomes gradually flatter and broader than the rest of this bone, having an outer and an inner edge which terminate in two processes, called,

68 The *outer* and *inner Condyles.*

69 The inner Condyle is the largest and most projecting.

70 The *Extensors* and *Supinators* of the Hand arise from the *external Condyle.*

71 The *Flexors* and *Pronators* of the Hand from the *internal Condyle.*

72 Between and somewhat below the two Condyles, the *Trochlea* is situated;

73 It is an oblique, pulley-like articular Surface, its *inner edge* is the most prominent; a *small round articular head* is placed between it and the outer Condyle.

74 Above these Parts there are two *slight depressions Anteriorly*, and a very considerable one *posteriorly.*

75 The *posterior one* receives the Olecranon, when the arm is extended; the *inner anterior one* receives the Coronoid Process of the Ulna, and the *outer anterior one* receives the round head of the Radius in the Flexions of the Foramen.

76 In its natural situation, the *hemispherical head* of this bone is turned *inward* and *backward;* the *great Tuberosity*, *outward* and *forward;* the *groove* between the two Tuberosities directly *forward;* the

Answ.

external Condyle forward and *outward*, and the *inner Condyle backward* and *inward.*

77 The *extremities* of this bone are cellular, but the *middle* has a Tubular cavity, and several bony Filaments passing across it.

78 It is *connected superiorly* with the *Glenoid Cavity* of the *Scapula*, and *inferiorly* with the *Ulna* by its Trochlea, and with the *Radius* by its little round head.

BONES OF THE FORE-ARM.

79 The *Fore-arm* consists of two Bones, namely, the *Ulna* and the *Radius.*

ULNA.

80 THE ULNA is situated in the inner side of the Fore-arm.

81 It is a cylindrical bone, in its circumference irregularly triangular.

82 It is divided into a *Body*, and *two Extremities.*

83 The *Olecranon* and *Coronoid* Processes are its chief Eminences.

84 The *Olecranon* forms the upper Extremity of this bone, to which is attached

85 The Triceps extensor Cubiti.

86 *The Coronoid Process* is situated on the anterior part of the bone somewhat lower than the former; this gives attachment to

87 The *Brachialis Internus.*

88 When the Fore-arm is extended, the *Olecranon is lodged* in the *posterior depression* of the inferior end of the Os Humeri.

89 During the flexion of the fore-arm, the *Coronoid process* is lodged in the *Anterior* and *inner depression* of the lower end of the Os Humeri.

90 The *Triangular Surface*, on the posterior part of the Olecranon, forms the part of the Elbow on which we rest; and in the depression on the outer side of this is lodged

91 The *Anconeus.*

92 The *Great Sigmoid Cavity* is the articular surface

Answ.

formed between the Olecranon and Coronoid Process.

93 It articulates with the Trochlea of the Os Humeri.

94 The *lesser Sigmoid Cavity* is situated on the outside of the root of the Coronoid Process;

95 It receives the *round head* of the Radius.

96 *The Body* of the Bone is *Triangular.*

97 The *Interosseus Ligament* is attached to its *outer sharp edge.*

98 The Canal for the medullary artery is placed about the middle of the anterior part of the bone, and slants upward.

99 The *Inferior Extremity* of this bone has a *small head externally*, and a *Styloid Process internally;* the latter gives attachment to

100 A Ligament from the Os Pisiforme.

101 The *Ulnar Artery* and Nerve pass immediately *before*, whilst

102 The *Tendon* of the *Extensor Carpi Ulnaris* passes *behind* this lower Extremity.

103 Its structure resembles that of the Os Humeri.

104 It is connected *superiorly* with the Pulley of the Os Humeri; *laterally* with the *two extremities* of the *Radius* and with the *hand inferiorly.*

RADIUS.

105 The Radius is placed on the outer side of the Fore-arm.

106 It is a cylindrical Bone irregularly triangular.

107 The *Radius* is shorter than the *Ulna.*

108 It is divided into *head*, *body*, and *basis.*

109 The *upper part* of the head is concave, for connexion with the small round head of the Os Humeri; and its *circumference* is Cylindrical for its articulation

110 With the lesser *Sigmoid Cavity* of the Ulna.

111 The *Neck* is situated immediately below the Head, and its direction is somewhat oblique.

112 *The Tuberosity* is situated on the inner and anterior side, immediately below the neck, to which is attached,

113 The Biceps Flexor Cubiti.

E 2

Answ.

114 Its *Body* is somewhat Triangular.

115 The *Interosseus Ligament* is attached to its *inner sharp Edge.*

116 The *Medullary Artery* enters about the middle of the anterior side of the Bone and slants upward.

117 The *Inferior Extremity* is the largest.

118 Its greatest diameter is from side to side.

119 *Anteriorly* it is uniform and somewhat hollowed for the passage of the *Flexor Tendons.*

120 It has a *semilunar depression* on its inner side for the *Inferior head* of the Ulna.

121 The Extensor Tendons are lodged in grooves on its posterior side.

122 On the outer side of its inferior end it has a *Styloid Process*, to which is fixed,

123 A Ligament, connecting it to the *Trapezium.*

124 Its structure resembles that of the other long bones.

125 It is *joined superiorly* to the *Os Humeri*, *laterally* to *both ends of the Radius*, and *inferiorly* to the *Bones* of the *Carpus.*

BONES OF THE HAND.

126 The *Hand* is divided into the *Carpus*, the *Metacarpus*, and the *Fingers.*

CARPUS.

127 The Carpus forms the wrist and the base of the hand.

128 It consists of *eight Bones.*

129 It is *convex externally*, and *concave internally*, and is of an irregular *quadrangular form.*

130 The Bones are arranged in *two rows*, an *upper* and a *lower* row, four Bones in each row.

131 Those of the upper row are, the *Os Scaphoides*, *Os Lunare*, *Os Cuneiforme*, *Os Pisiforme;* those of the lower row are, *Os Trapezium*, *Os Trapezoides*, *Os Magnum*, and *Os Unciforme.*

132 The Os Scaphoides is the *first*, or most external Bone of the *first row.*

133 Its *superior side* is *convex;* its *inferior side concave;*

Answ.

and the whole Bone is *oblong*, bearing, as its name implies, some resemblance to a boat.

134 THE OS LUNARE is the *second Bone* of the *first row.*

135 It is *convex superiorly; concave inferiorly.* Its *anterior* and *posterior surfaces* are rough for the attachment of Ligaments.

136 THE OS CUNEIFORME is the *third Bone* of the first row.

137 Its *upper* surface is *convex;* its *anterior* surface has upon it an orbicular plane for the *Os Pisiforme;* it has also *articular* surfaces toward the Os Semilunare, and the Os Unciforme.

138 THE OS PISIFORME is the *fourth Bone* of the first row *placed* upon the anterior side of the Cuneiforme.

139 It is irregularly *round.*

140 THE OS TRAPEZIUM is the *first* or *external Bone* of the second row.

141 It is *irregularly square;* its *inner* surface has upon it an *oblong eminence* for the Carpal Ligament, and a *groove* for the Tendon of the Flexor Longus Pollicis; its *upper side* is *hollow* for articulation with the *Os Scaphoides;* its *lower side* is connected with the first Bone of the Thumb; its *outer surface* is *rough;* and its *inner side* is connected, *superiorly* with the Os Trapezoides, and *inferiorly* with the first Bone of the Metacarpus.

142 THE OS TRAPEZOIDES is the *second Bone* of the *second row;* it is *joined superiorly* to the Os Scaphoides; *inferiorly* to the base of the first Metacarpal Bone; on its *Radial side* to the Os Trapezium; and on its *Ulnar side* to the Os Magnum.

143 THE OS MAGNUM is the *third Bone* of the *second row;* its *superior side* is *round* for connexion with the Os Scaphoides, and Os Lunare; *inferiorly* it is joined to the second Metacarpal Bone, on its *Radial side*, to the Os Trapezoides; and on its *Ulnar side* to the Os Unciforme.

144 THE OS UNCIFORME is the *fourth Bone* of the second row.

Answ.

145 Its *anterior surface* has upon it a *hook-like process*, from which the Carpal Ligament, and some Muscles of the little Finger arise; its *posterior surface* is *rough* for the attachment of Ligaments; its *Radial side* is double corresponding to the Ulnar side of the Os Magnum; its *superior side* corresponds to the inferior one of the Os Cuneiforme; its *inferior side* is double for the last Bones of the Metacarpus.

146 The *structure* of these Bones is spongy.

METACARPUS.

147 The Metacarpus is placed immediately below the Carpus.

148 It consists of *four Bones*, one supporting each Finger; some anatomists reckon *five*, considering the first Bone of the Thumb as a Metacarpal Bone.

149 They are long Bones, thicker at the extremities than at the middle.

150 Each may be divided into a *basis*, *body*, and *head*.

151 Their *Bases* are *narrow* toward the *palm*, *broader* toward the *back* of the Hand, and *broadest* on each *side*.

152 Their *Bodies* are contracted, of a triangular figure; *posteriorly* somewhat *convex*, for the back of the Hand; and *anteriorly* each has a *sharp Ridge*.

153 Their *Heads* are round Eminences *flatted* on *each side;* their greatest convexity is turned towards the Palm.

154 The *first*, which supports the Forefinger, is the longest.

155 Their structure resembles that of the long Bones.

156 They are *connected superiorly* to the Bones of the Carpus; *laterally* to each other by their bases; and inferiorly to the first Bones of the Fingers.

BONES OF THE FINGERS.

157 *Each Finger* is composed of three Bones; there are fifteen upon the whole, including those of the Thumb.

158 They are called *Phalanges;* those nearest the Me-

Answ.

tacarpal Bones are called the *first*, and those which form the ends of the Fingers the *third*, or *last*.

159 *The first of the Thumb* considerably resembles the Bones of the Metacarpus, its *convex side* is much flatted, and broadest toward the head, which resembles the Metacarpal Bones. *The articular surface* of its base is a double Ginglymus, allowing Flexion and Extension, Adduction and Abduction, and corresponds to the lower side of the Os Trapezium.

160 *The second Bone* of the Thumb is *shorter* than the first, convex on one side, flat on the other, and contracted between the edges.

161 The *base* of the third Bone of the Thumb forms a *Ginglymus* with the head of the second Bone, and has very near it, on each side, a small Tuberosity. Its head is small and flat, and ending in a rough semicircular edge.

162 *The first Phalanges* of the Fingers somewhat resemble the second Bone of the Thumb, but they are longer, flatter anteriorly, and rounder posteriorly.

163 *The second Phalanges* of the Fingers are *shorter*, *narrower*, and *thinner* than those of the first; their *bases* have a double cavity for a Ginglymoid Articulation.

164 *The third Phalanges* exactly resemble that of the Thumb, except that their size is proportioned to their respective Fingers.

SECTION IX.

OF THE BONES OF THE LOWER EXTREMITIES.

1 Each *Lower Extremity* is divided into the *Thigh*, *Leg*, and *Foot;* one Bone forms the Thigh, called,

OS FEMORIS.

2 The Os Femoris is placed nearly in the same direction with the Trunk, only bends somewhat inward.

3 It is divided into its *body*, a *superior* and *inferior Extremity*.

Answ.

4 *At the upper Extremity* the *head* is situated, which resembles a large portion of a Ball, supported by its long neck.

5 It is turned obliquely inward and a little forward, forming an Angle with the body.

6 There is an irregular *Fossula* in the head, a little below its centre to which is attached

7 A strong Ligament, called the *Ligamentum Teres.*

8 The *Neck* is placed at the upper part of the Bone;

9 It is inclined upward and slightly forward, supporting the head.

10 Around the root of the neck the *Capsular Ligament* is attached.

11 *Trochanter Major* is the name given to the great Tuberosity at the root of the neck; and which is

12 Situated at its outer side;

13 Its *external convex surface* is covered by the tendon of the *Gluteus Maximus.*

14 The *Gluteus Minimus* is attached to the *rough broad irregular mark anteriorly.*

15 To its *long posterior edge* the *quadratus femoris* is attached.

16 Its *sharp superior edge* gives insertion to the *Gluteus Medius posteriorly*, and to the *Pyriformis*, *Obturator internus*, and *gemini*, *anteriorly.*

17 In its *fossa* is attached the *tendon* of the *Obturator externus.*

18 The body of this bone is Cylindrical.

19 At the inner and posterior part of the root of the neck the *Trochanter Major* is situated, to which are attached,

20 The *Iliacus Internus* and *Psoas* Muscles.

21 The rough prominent line passing along the *Posterior part* of the Os Femoris, is called *Linea Aspera.*

22 The *Gluteus Maximus* is attached to its commencement at the root of the great Trochanter.

23 The *Triceps* is inserted into its middle, and the short head of the Biceps arises from it.

24 Below it divides into two Ridges, one of which passes externally and the other internally.

25 The *Vastus Externus* is attached to the outer ridge.

Answ.

26 The *Vastus Internus*, and the Aponeurosis of the great head of the Triceps to the inner ridge.

27 The Femoral vessels pass over the internal one; this is terminated by a Tuberosity, into which is inserted,

28 The *Tendon* of the *great head of the Triceps.*

29 The Canal for the *Medullary Artery* is placed about the *middle of the Linea Aspera*, and slants upward.

30 The lower *Extremity* is broad and thick, formed of two large protuberances projecting downward and backward, called,

31 The *Condyles* of the *Os Femoris.*

32 The *inner Condyle* projecting most posteriorly and inferiorly.

33 The *outer Condyle* is more prominent anteriorly.

34 A deep *Notch* separates the Condyles posteriorly.

35 Through which the Vessels pass from the Arm.

36 The *Crucial Ligaments* are attached to the sides of this Notch.

37 The junction of the Condyles anteriorly forms a pulley-like Surface on which the Patella rests.

38 The heads of the *Gastrocnemius* are attached just above the posterior terminations of the Condyles.

39 Its *structure* resembles that of the other long bones.

40 It is connected to the *Os Innominatum* superiorly, and to the *Tibia* inferiorly.

BONES OF THE LEG.

41 The *Leg* consists of three Bones, namely the *Tibia*, *Fibula*, and *Patella.*

TIBIA.

42 The Tibia is situated on the inner side of the Leg.

43 Its circumference is irregularly triangular; it is larger above than below.

44 It is divided into a *Body*, an *upper* and a *lower Extremity.*

45 Its thick expanded *superior Extremity*, which has been called its head, presents two broad *articular surfaces*, one placed *externally*, the other *internally*, nearly horizontal and slightly hollowed: of these,

Answ.

46 The *internal* one is somewhat *oblong* and depressed, the external one is *rounder.*

47 Between them there is a *rough Tuberosity*, to which the crucial ligaments are attached.

48 The *Semimembranosus* is inserted into a tuberosity at the posterior and interior part of the head.

49 The *head* of the *Fibula* is articulated with the tuberosity behind the outer part of the head.

50 The *Ligament* of the *Patella* is attached to the tuberosity at its fore part.

51 The *body* presents *three* distinct *surfaces* and *edges.*

52 The *Interosseus Ligament* is attached to the *inner edge.*

53 The *Medullary Canal* is situated some way above the middle of the posterior side of the bone, and slants downward.

54 The *lower Extremity* is much smaller than the upper.

55 On its *outer side* there is a longitudinal depression for the end of the Fibula.

56 On its *inside* a process called the *Malleolus Internus*, which gives attachment to a strong ligament.

57 The *lower end* of the *Tibia* and its *Malleolus Internus*, together with the *lower end* of the *Fibula*, or the *Malleolus Externus*, form a Trochlea, or *pulley-like cavity*, in which plays the first bone of the foot.

58 This Bone is joined *superiorly* to the *Os Femoris and Patella; laterally* to the *Tibia* both above and below, and *inferiorly* to the *Astragalus.*

PATELLA.

59 The Patella is situated directly *above* the anterior Tuberosity of the Tibia.

60 It is about half as thick as it is long, but its length and breadth are nearly equal.

61 It is divided into a *Basis*, an *Apex*, and *two Sides.*

62 The *Base*, which is turned upward, gives attachment to the union of the *Vasti*, *Rectus Femoris*, and *Cruralis.*

63 The Ligament of the Patella is fixed to the *Apex.*

64 Its inner or posterior side is somewhat concave, and *divided into two* by a middle ridge.

Answ.

65 Of these the *deepest cavity* is the most *external.*

66 It is of a spongy structure.

67 It is connected to the anterior Tuberosity of the Tibia by a strong ligament, and is articulated with the pulley and condyles of the Femur.

FIBULA.

68 **The Fibula** is placed on the *outside* of the *Leg.*

69 It is a long slender Bone, having three surfaces, and edges which are contorted in their course.

70 It is divided into a *body, an upper and a lower extremity.*

71 The upper *Extremity,* or *Head,* is obliquely flatted by a small *articular Plane* internally, and has upon its outer side a small *Tuberosity,* to this is attached,

72 The *Tendon* of the *Biceps* and the external *lateral Ligament.*

73 The *articular surface* is connected with a similar one on the Tibia.

74 The circumference of the body is irregularly triangular.

75 There is on the inner side a sharp line to which the Interosseus Ligament is attached.

76 The Canal for the Medullary Artery, is placed about the middle of the posterior side of the bone, and slants downwards.

77 The lower extremity of this bone is *broader, flatter,* and more *oblong* than the upper.

78 The outer articular surface of the Astragalus is articulated with it.

79 It is terminated by a *tuberosity,* to which a strong *ligament* is fixed.

80 It is *connected laterally* to the *Fibula, both above* and *below,* and *inferiorly* to the *Astragalus.*

BONES OF THE FOOT.

81 The Bones of the Foot are arranged under three classes, namely, those of the *Tarsus, Metatarsus,* and *Toes.*

TARSUS.

Answ,

82 The Tarsus forms the *posterior part* of the Foot.

83 It consists of seven bones, namely, the *Astragalus*, *Os Calcis*, *Os Scaphoides*, *Os Cuboides*, and the three *Ossa Cuneiformia*, the *Internum*, *Medium*, and *Externum*.

84 The *Astragalus* is the most superior, and, with the bones of the leg, forms the Ankle Joint.

85 It is *extremely irregular*, but may be divided into a *body*, or *posterior portion*, and an *Apophysis* or *Anterior Portion*.

86 Its superior articular surface resembles half a pulley.

87 Its *inferior surface* is divided into two articular facettes by a deep transverse groove.

88 These *articular surfaces* are united to corresponding ones on the Os Calcis.

89 The anterior articular surface is round and prominent, it has been called *the head* of this bone, and is articulated with the Os Naviculare.

90 The *Os Calcis*, placed at the posterior and inferior part of the Tarsus, forms the heel.

91 It is of an irregular oblong form.

92 The *superior surface* is divided by a groove, which separates two articular surfaces, for its union with the Astragalus.

93 It is broad, unequally convex, and rough posteriorly.

94 The Tendo Achillis is attached to this *roughness*.

95 It is narrow and rough inferiorly.

96 It has a concave *articular surface* anteriorly, by which it is joined to

97 The *Os Cuboides*.

98 It is very rough and broad *externally*.

99 It is considerably concave *internally* for the lodgment of

100 Several Muscles and Tendons as well as many vessels and nerves going to the Foot.

101 The *Os Scaphoides* is placed immediately before the Astragalus.

102 As its name implies, it somewhat resembles a small boat, and has an *anterior*, and a *posterior cartilagi-*

Answ.

nous surface; an *oval circumference*, and an *inferior Tuberosity.*

103 The head of the *Astragalus* is lodged in the *posterior concave side.*

104 The three *Ossa Cuneiformia* are articulated with its anterior convex side.

105 The *Tuberosity*, turned inwards and downward, gives attachment to a portion of the *Abductor Pollicis*, and Tibialis anticus.

106 The *Os Cuboides* is situated before the Os Calcis on the outside of the Os Naviculare.

107 It has *six* irregular *sides.*

108 Its *inferior surface* is rough; before an *oblique eminence* there is a well marked *groove* which lodges,

109 The *Tendons* of the *Peroneus Longus.*

110 The *posterior side* is *articular*, and formed to adapt itself to

111 The anterior part of the *Os Calcis.*

112 The *anterior surface* is also articular, flat, and divided into two portions by a narrow faint line; it is articulated with,

113 The fourth and fifth bones of the Metatarsus.

114 Its inner side has upon it a round cartilaginous surface, and the rest of it is rough.

115 The *Os Cuneiforme Externum* is articulated with it.

116 The outer side is *irregular*, *short*, and *narrow.*

117 The upper side is flat and rough for the attachment of Ligaments.

118 The *Ossa Cuneiformia* are situated *before* the Os Scaphoides, and *internal* to the Os Cuboides.

119 The *internal* is the *largest*, the *external* the *least.*

120 Each *Cuneiform* bone has a *base* superiorly, an *apex* inferiorly, and a *posterior*, an *anterior*, an *external*, and an *internal side.*

121 The *Os Cuneiforme Internum* somewhat resembles a wedge contorted and bent, and has its *base* turned *downward.*

122 The *Os Cuneiforme Medium* has more resemblance to a wedge, and has its *base upward.*

123 The *Os Cuneiforme Externum* also resembles a wedge, and has its *base upward.*

METATARSUS.

Answ.

124 The Metatarsus *forms* the *middle part* of the Foot.

125 It consists of *five* bones, one supporting each Toe.

126 They are longer and more slender than the Metacarpal Bones.

127 Each may be divided into a *body*, *basis*, and *head.*

128 Their *bases* resemble a wedge whose edges are turned downward.

129 The bodies are *long* and *slender*, and *flatted* on each side.

130 Their *heads*, or anterior Extremities, are convex and smooth, much flattened laterally, and are joined to the Toes.

131 The first of the Metatarsal Bones is by much the thickest.

132 The *fifth* is distinguished by a *rough projection* from its base; to which is attached the *peroneus brevis.*

133 They are joined to the *Tarsus*, and to each other *posteriorly*, and to the first *Phalanges* of the *toes anteriorly.*

BONES OF THE TOES.

134 The five Toes are formed by fourteen Bones; three belonging to each of the four lesser Toes, and two to the great Toe.

135 They are arranged as those of the Fingers.

136 The *first bone of the great Toe* somewhat resembles the *second* bone of the thumb; its base is considerably hollow, and its head resembles a pulley.

137 The *second bone of the great Toe* resembles the last of the thumb; but is much bigger, and its anterior edges more unequal.

138 The first bones of the other toes are the largest; but are shorter, narrower, and more convex than those of the fingers.

139 Their second bones are very short, and almost of the same oblong form.

Answ.

140 Their third bones nearly resemble those of the fingers.

141 The small oval bones chiefly found under the first joint of the great toe are called *Sessamoid Bones.*

SECTION X.

FEMALE SKELETON.

1 The *Bones* of the *Female* are smaller and less strongly marked than those of the Male; all muscular attachments, depressions, and protuberances are smaller.

2 The *Skull* of the Female is said to be larger though more delicate.

3 The Sinuses of the *Os Frontis* are less capacious, and it is more frequently divided by a Suture down the middle.

4 The *Clavicles* are straighter.

5 The *Sternum* is shorter and more elevated below.

6 The *Cartilages* of the *True Ribs* are larger, broader and flatter to support the Mammæ.

7 The *Bodies* of the *Vertebræ* are deeper.

8 The *Sacrum* is broader and set more backward.

9 The *Os Coccygis* is more movable.

10 The *Ossa Ilia* are broader and more turned outward.

11 The *arch of the Pubis* and the Ischiatic notch are larger.

12 The *Tuberosities* of the *Ischia* are more distant and flatter.

13 The *Ossa Femorum* are more distant, and the angle of the neck with the body of the bone is greater.

14 The *Pelvis* contains the most distinct Characters of difference between the Male and Female Skeleton.—*In the Female*, though the bones of the Pelvis are less massy and rough, *the cavity* they form is more capacious; *the Ilia* more expanded; *the brim* more rough and of an oval form, its greatest diameter being from side to side; *the Outlet* more expanded; *the Arch* of the *Pubis* greater; and the *Tuberosities* of the *Ischia* more distant from each other.

CHONDROLOGY.

SECTION XI.

OF CARTILAGES.

Answ.

1 *Cartilages* are white, elastic, smooth, and very compact substances, in density next to bone.

2 There are four kinds of Cartilage. 1. *Diarthrodial Cartilages.* 2. *Synarthrodial Cartilages.* 3. *Interarticular Cartilages.* 4. *Cartilages* through life *supplying* the place of bone.

3 DIARTHRODIAL Cartilages cover the ends of bones forming movable joints.

4 They afford a highly polished Surface, favourable to the motions of the joint, and their elasticity renders violent movements less dangerous.

5 SYNARTHRODIAL Cartilages are placed between several bones, having no perceptible motions on each other as the bones of the Pubis, &c.

6 They answer the purpose of a bond of Union, and also prevent the ill effects of Shocks from sudden and violent motions.

7 INTERARTICULAR Cartilages are placed in some joints between the bones, as in the joint of the Lower Jaw, the Clavicle with the Sternum, and the Knee joint.

8 They prevent the ill effects of Friction, enlarge the articular Cavity, and extend the mobility of the joint.

9 The Nose, the Larynx, Trachea, and part of the Chest have in part Cartilage supplying the place of Bone.

SYNDESMOLOGY.

SECTION XII.

OF THE LIGAMENTS OF THE HEAD AND TRUNK.

Answ.

1 *Ligaments* are strong, flexible substances, usually connecting those bones together, which form movable joints.

2 There are two kinds of Ligaments. 1. The *Capsular.* 2. The *connecting* Ligaments.

3 The *Capsular* Ligaments surround the joints on all sides.

4 They form bags, which retain, and probably secrete, the Synovia, whilst they contribute to the union of the bones.

5 The *connecting* Ligaments are usually of a firmer and more fibrous texture than the Capsular.

6 They strengthen considerably the union of bones.

7 They are called *lateral*, *crucial*, *round*, &c. according to their situations or form.

8 There are other kinds of ligamentous substances in the body, some answering the purpose of bones, others strengthening the union of bones not moving on each other: these two kinds may be found about the Pelvis; a third kind are the *Elastic Ligaments*, they exist about the Vertebræ; in some animals they are very common, of this nature is the whiteleather in the neck of grazing animals, and the substance which supports the talons of animals of prey, &c. &c.

9 For the *lower Jaw* there are two ligaments on each side, viz. a *capsular* and a *lateral* one.

10 The *capsular Ligament* arises round the articular surface of the Squamous Portion of the Temporal Bone, and, inclosing in its passage downward an interarticular Cartilage, is fixed round the Condyloid process of the lower Jaw.

Answ.

11 The *lateral Ligament* arises from the root of the Styloid process of the Temporal Bone, and is inserted into the inside of the angle of the lower jaw.

12 For the union of the *Vertebræ* there are *seven kinds* of Ligaments, viz. the *common anterior ligament*, *common posterior*, *crucial* or *intervertebral*, the *capsules* of the oblique processes, *intertransverse*, *subflava*, and *interspinous*.

13 The *common anterior Ligament* arises from the fore part of the first Vertebra, and *covers* the anterior part of the whole spinal column as far down as the Os Sacrum.

14 The *common posterior Ligament* arises from the *anterior* part of the Foramen-Magnum, and *covers* the posterior part of the bodies of the Vertebræ to the termination of the Os Sacrum.

15 The *crucial or intervertebral Ligaments* cross each other obliquely from the edge of one Vertebra to that of another.

16 The *Capsules of the oblique Processes* arise from the edge of one oblique process, and surround that of another.

17 The *intertransverse Ligaments* pass between the transverse processes of the Vertebræ.

18 The *Ligamenta Subflava* connect the bony arches of the Vertebræ.

19 The *Interspinous Ligaments* connect the Spinous processes of the Vertebræ.

20 The *Ligaments* peculiar to the Cervical Vertebræ are two, viz. the *Ligamentum Nuchæ*, common to all the Vertebræ of the Neck, and the *Transverse Ligament* belonging to the two first.

21 The *Ligamentum Nuchæ* arises from the Spine of the Occiput, and is attached to the Spinous processes of all the Cervical Vertebræ.

22 The *Transverse Ligament of the Atlas* is attached to a small Tuberosity, on each side of the articular depression behind the anterior arch of the Atlas, and incloses the Tooth-like process of the Dentatus.—It sends one process up to the Occiput, and another down to the inferior Vertebræ.

Answ.

23 The Ligaments connecting the first Vertebra and Os Occipitis are *four* in number, being those of the Anterior and Posterior Arches of the Atlas and the Caspular Ligaments for the Condyles.

24 The Ligaments from the Second Vertebra to the Occiput are three in number, *one Perpendicular* and *two lateral.*

25 The *Perpendicular Ligament* arises from the tip of the tooth-like process of the second Vertebra, and is inserted into the edge of the Foramen Magnum between the Condyles.

26 The *lateral Ligaments* arise from each side of the Processus Dentatus, and are inserted into the Occiput before the Condyles, and also into the inside of the Atlas.

27 The Ligaments connecting the Ribs and Vertebræ are of six kinds, viz. the *Capsular* of the *Heads* of the *Ribs*, the *Capsular* of the *Tubercles* of the *Ribs*, the *External Ligaments* of the *Necks* of the *Ribs*, the *Internal Ligaments* of the *Necks* of the *Ribs*, the *External Transverse Ligaments*, and the *Internal Transverse Ligaments.*

28 The *Capsules* of the *heads* of the *Ribs* surround their junction with the bodies of the Vertebræ.

29 The *Capsules* of the *Tubercles* surround their junction with the Transverse processes of the Vertebræ.

30 The *External Ligaments* of the *Necks* arise from the roots of the Oblique processes, and are inserted into the necks of the Ribs.

31 The *Internal Ligaments* of the *Necks* arise from the lower edges of the Transverse processes, and are inserted into the internal part of the necks of the Ribs.

32 The *External Transverse Ligament* arises from the Transverse process, and is inserted into the angle of each Rib.

33 The *Internal Transverse Ligament* arises from the body of each Vertebra, and is inserted anteriorly a little beyond the head of each Rib.

34 The *Ligaments* connecting the Ribs to each other are called *Coruscating Ligaments*, and pass between their Cartilages.

Answ.

35 The *Ligaments* connecting the Ribs and Sternum are of two kinds, viz. *Capsular Ligaments*, and *Transverse* ones.

36 The *Capsules of the Cartilages* connect them to the depressions of the Sternum.

37 The *External* and *Internal Transverse Ligaments* externally and internally connect the Cartilages of the Ribs to the Sternum.

38 The *Proper Ligaments* of the *Sternum* are two, viz. the *common Membrane* of the *Sternum*, and the *Ligaments* of the *Xiphoid Cartilage.*

39 The *Ligaments* of the *Pelvis* are anteriorly three, viz. *Poupart's Ligament*, the *Annular Ligament*, and the *Obturator Ligament; posteriorly* they are five, viz. the *Transverse*, the *Ilio-Sacral*, the *Ligamenta Vaga*, the *short Ischiatic*, and the *long Ischiatic Ligament.*

40 *Poupart's Ligament arises* from the anterior superior Spinous process of the Ilium, and is *inserted* into the angle of the Pubis. Some of its fibres are inserted into the Pubis before it reaches the angle, and it is these which are to be divided in Gimberant's Operation for Femoral Hernia.

41 The *Annular Ligament* surrounds the articulation of the Ossa Pubis.

42 The *Obturator Ligament* closes up the Foramen Thyroideum, leaving only a small notch at its superior part.

43 The *Transverse Ligaments* arise from the Transverse processes of the fourth and fifth Lumbar Vertebræ, and are inserted into the posterior superior Spinous process of the Ilium.

44 The *Ilio-Sacral Ligament* arises from the superior posterior spine of the Ilium, and is inserted into the back of the Sacrum.

45 The *Ligamenta Vaga* are numerous small Ligaments which pass from the Ilium to the Sacrum anteriorly and posteriorly.

46 The *Short Sacro-Ischiatic Ligament* arises from the spine of the Ischium, and is inserted into the posterior part of the Transverse process of the Sacrum.

47 The *Long Sacro-Ischiatic Ligament* arises from the

Answ.

internal edge of the Tuberosity of the Ischium, and is inserted along with the last.

48 The Ligaments of the Os Coccygis are four in number, viz. a *Capsular*, an *Anterior*, a *Posterior*, and a *Lateral Ligament.*

SECTION XIII.

OF THE LIGAMENTS OF THE UPPER EXTREMITY.

1 The LIGAMENTS, connecting the Clavicle to the Sternum, are three in number, viz. the *Caspular* Ligament, the *Interclavicular* Ligament, and the *Rhomboid* Ligament.

2 The *Capsular Ligament* arises around the depression of the Sternum, and, involving an interarticular cartilage, is inserted around the end of the Clavicle.

3 The *Interclavicular Ligament* passes behind the Sternum from the end of one Clavicle to that of the other.

4 The *Rhomboid*, or *Costo-Clavicular Ligament* connects the first Rib and Clavicle near the Sternum.

5 The LIGAMENTS, *connecting* the *Clavicle* and *Scapula*, are three in number, viz. the *Capsular*, the *Conoid*, and the *Trapezoid.*

6 The *Capsular Ligament* arises around the Sternal end of the Clavicle, and is fixed round the articular surface of the Acromion.

7 The *Conoid* or *Coraco-Clavicular Ligament* arises pointed from the root of the Caracoid process, and is inserted into the inferior side of this end of the Clavicle.

8 The *Trapezoid Ligament* differs in form from the last, but has nearly the same origin and insertion.

9 The LIGAMENTS proper to the *Scapula* are two in number, viz. an *Anterior* and a *Posterior.*

10 The *Anterior* arises from the upper edge of the Acromion, and is inserted into that of the Caracoid process, also called *Coraco-Acromial Ligament.*

11 The *Posterior* arises from the root of the Caracoid process, and passes over the notch to the superior Costa of the bone.

Answ.

12 The LIGAMENTS, connecting the Scapula and Humerus, are two in number, viz. the *Capsular* and the *upper part* of the *Tendon* of the *Biceps.*

13 The *Capsular Ligament* arises from the margin of the Glenoid Cavity, and is inserted round the neck of the Humerus.

14 The *Tendon* of the *Biceps* arises from the upper edge of the Glenoid Cavity, passes through the joint and, being fixed in its groove by a Strong Sheath, it contributes to strengthen the shoulder joint.

15 The LIGAMENTS PROPER to the *Humerus* are two in number, viz. the *External* and the *Internal Intermuscular.*

16 The *External Intermuscular Ligament* arises from the external Condyle, and is inserted into the middle of the outside of the bone.

17 The *Internal Intermuscular Ligament* arises from the Internal Condyle, and is inserted into the middle of the inside of the bone.

18 The Humerus is connected to the Radius and Ulna by THREE LIGAMENTS, viz. the *Capsular*, and the *External* and *Internal Lateral.*

19 The *Capsular Ligament* arises round the Trochlea of the Humerus, and is inserted around the heads of the Radius and Ulna.

20 The *External Lateral* arises from the External Condyle of the Humerus, and is inserted into the outside of the neck of the Radius.

21 The *Internal Lateral* arises from the internal Condyle, and is inserted into the inner side of the Coronoid process of the Ulna.

22 The LIGAMENTS connecting the Radius and Ulna are four in number, viz. the *Coronary*, the *Oblique*, the *Interosseous*, and the *Sacciform.*

23 The *Coronary* arising from the Ulna, surrounds the head of the Radius.

24 The *Oblique* arises from the base of the Coronoid process of the Ulna, and is inserted into the tubercle of the Radius.

25 The *Interosseous* is attached to the acute edges of these Bones, turned towards each other.

Answ.

26 The *Sacciform* Ligament unites in a distinct articulation the lower ends of the Radius and Ulna.

27 The Ligaments *connecting the Radius and Ulna to the Carpus* are three in number, viz. the *Capsular*, the *External*, and the *Internal Lateral.* Between the end of the Ulna and the Os Naviculare, a *triangular interarticular cartilage* is placed.

28 The *Capsular Ligament* arises around the lower articular surfaces of the Radius and Ulna, and is inserted round the three first bones of the Carpus.

29 The *External lateral Ligament* arises from the Styloid process of the Radius, and is inserted into the outside of the Os Scaphoides.

30 The *Internal lateral Ligament* arises from the Styloid process of the Ulna, and is inserted into the outside of the Os Cuneiforme and Os Unciforme.

31 The Ligaments of the *Carpus* are of five kinds, viz. the *Capsular*, the *Transverse*, the *Posterior Annular*, the *Anterior Annular*, and the *Vaginal.*

32 The *Capsular Ligament* surrounds and connects all the Carpal Bones.

33 The *Transverse*, passing from one to another, tie the individual bones together.

34 The *Posterior Annular* binds down the tendons of the Extensor Muscles to the back of the Carpus.

35 The *Anterior Annular* arises from the Os Pisiforme and Os Unciforme, and is inserted into the Trapezium, under which pass the Flexor Tendons.

36 The *Vaginal Ligaments* proceed from within the anterior annular, and sheathe the Flexor Tendons.

37 The Ligaments *connecting* the Carpus to the bases of the Metacarpal bones are of four kinds, viz. the *Capsular*, the *Lateral*, the *Dorsal*, and the *Palmar.*

38 The *Capsular Ligaments* are derived from that of the Carpus, which includes the bases of these bones.

39 The *Lateral* are situated on each side of the articulations.

40 The *Dorsal* are Transverse Ligaments, connecting the bases of these bones, on the back of the hand.

41 The *Palmar* connect the bases of the Metacarpal Bones in the Palm.

Answ.

42 The LIGAMENTS of the *head* of the Metacarpal bones are of three kinds, viz. *Capsular*, *Lateral*, and *Transverse.*

43 The LIGAMENTS connecting the Phalanges are at each Joint *Capsular* and *Lateral.*

SECTION XIV.

OF THE LIGAMENTS OF THE LOWER EXTREMITY.

1 *Two* LIGAMENTS connect the *Os Femoris* to the *Os Innominatum*, viz. a *Capsular*, and a *Round* Ligament.

2 The *Capsular Ligament* arises from the Margin of the Acetabulum, and is inserted around the root of the neck of the Femoral Bone: a reflected layer of this Ligament passes up the neck to the edges of the head of the bone; and Transverse Ligaments connect the one layer with the other.

3 The *Round Ligament* arises from the small depression of the head of the Femur, and is inserted into the middle of the Acetabulum.

4 There are SIX LIGAMENTS which connect the Femur to the Tibia and Fibula, namely, the *Capsular*, *Popliteal*, *Internal Lateral*, *External Lateral*, *Anterior Crucial*, and *Posterior Crucial.*

5 The *Capsular Ligament* passes from the edges of the articular surface of the Femur to those of the Tibia, being attached also to the Patella.

6 The *Popliteal Ligament* arises from the external Condyle of the Femur, and, passing in the posterior part of the Capsule, is expanded upon the internal side of the Joint.

7 The *External lateral* arises from the External Condyle, and is inserted into the Head of the Fibula. It generally divides itself into two portions.

8 The *Internal lateral* arises from the Internal Condyle, and is inserted into the inside of the head of the Tibia.

9 The *Posterior Crucial* arises from the inside of the notch between the Condyles of the Femur, and is

Answ.

inserted into the posterior part of the rough ridge on the top of the Tibia.

10 The *Anterior Crucial* arises from the outside of the notch between the Condyles of the Femur, and is inserted into the middle of the ridge on the top of the Tibia.

11 The LIGAMENTS *of the Patella* are of two kinds, the *Anterior* Ligament, and the *Alar* Ligaments.

12 The *Anterior Ligament* arises from the inferior point of the Patella, and is inserted into the Anterior Tuberosity of the Tibia.

13 The *Alar Ligaments* proceed on each side, from the inner side of the Capsular, and are inserted into the sides of the Patella.

14 There are THREE LIGAMENTS connecting the Tibia to the Fibula, viz. the *Capsular*, the *Interosseous*, and the *Transverse*.

15 The *Capsular* connects the Upper Extremities of the Tibia and Fibula.

16 The *Interosseous* connects the outer edge of the Tibia to a ridge on the inner side of the Fibula.

17 The *Transverse Ligaments*, anteriorly and posteriorly, connect the lower end of the Fibula to that of the Tibia.

18 The LIGAMENTS connecting the Tibia and the Fibula to the Tarsus are five in number, viz. the *Capsular*, the *Deltoid* and the *Anterior*, *Middle* and *Posterior* Ligaments of the Fibula.

19 The *Capsular Ligament* surrounds the junction of these Bones with the Astragalus.

20 The *Deltoid Ligament* arises from the internal Malleolus, and is inserted into the Astragalus and Naviculare.

21 The *Anterior Ligament* arises from the External Malleolus, and is inserted into the outside of the Astragalus.

22 The *Middle Ligament* arises from the Tip of the External Malleolus, and is inserted into the outside of the Os Calcis.

23 The *Posterior Ligament* arises from the back part of the External Malleolus, and is inserted into the back part of the Astragalus.

Answ.

24 The LIGAMENTS OF THE TARSUS are of three kinds, namely, the *Capsular*, the *Transverse*, the *Plantar*, and a *Ligament* at the internal side of the Foot.

25 The *Capsular Ligament* includes all the Tarsal and the heads of the Metatarsal bones.

26 The *Transverse Ligaments*, passing from one to another, tie the individual bones together.

27 The *Plantar Ligament* is situated on the outside of the sole of the Foot.

28 The *Internal Ligament* passes from the lower part of the Os Calcis to the lower part of the Os Naviculare, supporting the Astragalus.

29 The Ligaments of the bases of the Metatarsal bones are of four kinds, viz. the *Capsular*, the *Lateral*, the *Dorsal*, and the *Plantar*.

30 The *Capsular Ligaments* are derived from that of the Tarsus which includes the bases of these bones.

31 The *Lateral* are situated on each side of the Articulations.

32 The *Dorsal* are Transverse Ligaments connecting these bones on the back of the Foot.

33 The *Plantar* connect the Metatarsal bones in the sole of the Foot.

34 The LIGAMENTS of the head of the Metatarsal bones are of three kinds, viz. the *Capsular*, the *Lateral*, and the *Transverse*.

35 Those of the Phalanges of the Toes are at each joint *Capsular* and *Lateral.*

36 The Tendons, passing over the Instep and behind the Ankles, are confined in their situations by Ligamentous bands.

MYOLOGY.

1 MUSCLES are fleshy bodies composed of bundles of parallel contractile fibres, with tendinous Extremities.

2 The *middle portion* of them is generally their principal part. It is of a red colour, softer and thicker than the other parts, and is alone capable of contraction.

Answ.

3 If the fibres run longitudinally the Muscle is termed *simple;* if they diverge from a tendinous centre they are named *radiated*, and when they have a feathery arrangement upon their tendons, they are called *penniform*, several of these united, *complex penniform*, &c.

4 They generally derive their names either from their USE, as *Levators* and *Depressors;* from their FORM, as *Trapezius*, *Rhomboideus*, &c.; from their SITUATION, as *Occipito-Frontalis*, *Pectoralis*, &c.; or from their points of ATTACHMENT, as *Sterno-Costalis*, *Sterno-Cleido-Mastoideus*, &c.

5 The TENDONS are generally placed at the extremities of Muscles, and are of a silvery hue, firm, compact, and incapable of contraction.

6 The least movable point of attachment is called the *Origin.*

7 The most movable point of attachment the *Insertion* of a Muscle.

SECTION XV.

OF THE MUSCLES OF THE TRUNK.

1 FIVE MUSCLES arise from the Trunk, and are inserted into it, and the Linea Alba, viz. *The Obliquus Externus Abdominis Descendens;* the *Obliquus Internus Abdominis Ascendens;* the *Transversalis Abdominis;* the *Rectus Abdominis;* and the *Pyramidalis.*

2 THE OBLIQUUS EXTERNUS *arises* from the inferior edges of the eight lower ribs, near their sternal ends, by an equal number of serrated digitations, which intermix with the digitations of the Serratus Anticus. *Posteriorly*, it is *covered* where it passes from the last Rib to the Crista Ilii by the Latissimus Dorsi, to which it adheres, and *superiorly* it is *connected* to the Pectoralis Major and Intercostales: running downward and forward, it is *inserted* by a thin and broad Tendon into a white line composed of the Tendons of the Abdominal Muscles, called *Linea Alba*, extending from the last bone of the Sternum to the Pubis. But before this Tendon reaches the Rectus Abdominis, it unites with the

Tendons of the Obliquus Internus, and Transversalis, and forms another white line called *Linea Semilunaris.* This Muscle is *also inserted* into the middle of the Crista Ilii, and into Poupart's Ligament, extending from its anterior Spine to the angle of the Pubis, and transmits over this Ligament a Fascia to the thigh. The lower part of its Tendon, near the Pubis, divides to form the Abdominal Ring for the Spermatic Cord in Males.—*Its use* is to bend the Body, or to raise the Pelvis, and by compressing the Abdomen to assist in respiration, in evacuating the fæces, urine, fœtus, &c.

3 The Obliquus Internus *arises* from Poupart's Ligament, about the middle of which it sends off the Cremaster; from all the Crista Ilii; and by a common Tendon, with the Serratus Posticus Inferior, from the Spines of the three lower Lumbar Vertebræ, and from the Os Sacrum.—It is *inserted* into the last bone of the Sternum, into the Cartilage of the last true, and those of all the false Ribs, into all the Linea Alba, and into the anterior part of the Pubis. It divides into two layers, the anterior passing before, the posterior, except at its lower part, behind the Rectus Abdominis to the Linea Alba.—*Its use* is to assist the former, and to bend the body in an opposite direction.

4 The Transversalis Abdominis *arises* internally from the Cartilages of the seven lower Ribs, being there connected with the Intercostals and Diaphragm, also from the Transverse Process of the last Vertebra of the back, from those of the four upper Vertebræ of the Loins, from the inner edge of the Crista Ilii, and from part of Poupart's Ligament.—It is *inserted* into the inferior bone of the Sternum, and almost all the length of the Linea Alba.—*Its use* is to compress the Abdomen.

5 The Rectus Abdominis *arises* from each side of the Symphysis Pubis. As it passes up it has four tendinous intersections, and is sheathed by the Tendons of the oblique and transverse muscles.—Joining fibres of the Pectoral, it is *inserted* into the Cartilages of the fifth, sixth, and seventh Ribs.—*Its*

Answ.

use is to depress the Trunk, or to elevate the Pelvis, and to compress the Abdomen.

6 The *Pyramidalis* arises between the origin of the Recti, from the Symphysis Pubis.—It is *inserted* about one-fourth up the Linea Alba, into it and the inner edge of the Reoti.—Its *use* is to assist the Recti.—

THE PARTITION between the Thorax and Abdominis called the DIAPHRAGM; its middle is tendinous, the remainder muscular; this part is divided into

7 The *greater Muscle* of the Diaphragm, and the *lesser Muscle* of the Diaphragm.

8 The GREATER MUSCLE OF THE DIAPHRAGM *arises* from the Cartilages of all the false, and of the last true Rib, also from the last bone of the Sternum; it forms a Septum between the Thorax and Abdomen, which is concave inferiorly.—It is *inserted* in a central tendon, toward the right side of which is a *triangular Foramen* for the Vena Cava inferior; to its upper part the Pericardium and Mediastinum are attached.—*Its use* is to act in respiration, and to expel the fæces and urine, and the fœtus in parturition.

9 The LESSER MUSCLE OF THE DIAPHRAGM *arises* by eight slips, from the second, third, and fourth Lumbar Vertebræ, which unite to form its *Crura*, and between *these* pass the Aorta and Thoracic Duct; on their outside the great Sympathetic Nerve, and some branches of the Vena Azygos, and about the middle of the fleshy belly of this Muscle the Œsophagus and eighth pair of Nerves pass through a considerable *Foramen*, called the *left one*, to distinguish it from that situated toward the right of its tendinous centre. It is *inserted* into the middle tendon posteriorly—*its use* is to assist the former.

10 *One Muscle* arises from the Pelvis and Vertebræ; and is inserted into the Ribs and Vertebræ, viz. The LONGISSIMUS DORSI;

11 It *arises* from the Spinous and Transverse Processes of the three upper false Vertebræ, from the Spinous and Transverse Processes of the Lumbar

Answ.

Vertebræ, and from the posterior Spine of the Os Ilium. It is *inserted* into the Transverse Processes of the Dorsal Vertebræ, and into the lower edge of the ten upper Ribs.—*Its use* is to extend the Trunk.

12 *One Muscle* arises from the Pelvis and Vertebræ, and is inserted into the Ribs, viz. The SACRO-LUMBALIS;

13 Its *origin** is the same as that of the Longissimus Dorsi.—It is *inserted* into the Curvature of the Ribs.—*Its use* is to pull down the Ribs, and to elevate the Trunk.

14 *One Muscle* arises from the Pelvis and Vertebræ, and is inserted into the Vertebræ, viz. The MULTIFIDUS SPINÆ;

15 It *arises* from the posterior Spine of the Ilium, from the Spinous and Transverse Processes of the upper False Vertebræ, from the Transverse and Oblique Processes of the Lumbar Vertebræ, from the Transverse Processes of the Dorsal, and from those of the four inferior Cervical Vertebræ.—It is *inserted* into the Spinous Processes of all the true Vertebræ except the first.—*Its use* is to extend the Vertebræ.

16 *One Muscle* arises from the Pelvis, and is inserted into the Ribs, viz. The QUADRATUS LUMBORUM;

17 It *arises* from the posterior part of the Crista Ilii.—It is *inserted* into the last Rib, the side of the last Dorsal Vertebra, and the Transverse Processes of all the Lumbar.—*Its use* is to bend the Trunk to one side, and when both act, to bend the Trunk forward.

18 *Six Muscles* arise from the Vertebræ, and are inserted into the Ribs, viz. The *Scalenus Anticus*, the *Scalenus Medius*, the *Scalenus Posticus*, the *Cervicalis Descendens*, the *Serratus Superior Posticus*, and *Serratus Inferior Posticus*.

19 THE SCALENUS ANTICUS *arises* from the Transverse Processes of the fourth, fifth, and sixth Cer-

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* This Muscle has properly other origins, because from the upper part of several of the lower Ribs arise as many small Muscles, which being inserted into it are called *Musculi Accessorii*.

Answ.

vical Vertebræ.—It is *inserted* into the upper side of the first Rib near its Cartilage.—*Its use* is to bend the Neck, or to elevate the Ribs on one side.

20 THE SCALENUS MEDIUS *arises* from the Transverse Processes of the Cervical Vertebræ.—It is *inserted* into the outer edge of the first Rib till within an inch of its Cartilage.—*Its use* is to assist the Scalenus Anticus.

21 THE SCALENUS POSTICUS *arises* from the Transverse Processes of the fifth and sixth Cervical Vertebræ.—It is *inserted* into the posterior part of the upper edge of the second Rib.—*Its use* is to assist the Scalenus Anticus.

22 THE CERVICALIS DESCENDENS *arises* from the Transverse Processes of the five Inferior Cervical Vertebræ.—It is *inserted* into the six superior Ribs.—*Its use* is to turn the Neck obliquely backward, and to one side.

23 THE SERRATUS SUPERIOR POSTICUS *arises* from the Spinous Processes of the three last Cervical, and two uppermost Dorsal Vertebræ.—It is *inserted* into the second, third, fourth, and fifth Ribs.—*Its use* is to elevate the Ribs.

24 THE SERRATUS INFERIOR POSTICUS *arises* in common with the Latissimus Dorsi from the Spinous Processes of the two inferior Dorsal, and three superior Lumbar Vertebræ.—It is *inserted* into the under edges of the four lower Ribs, near their Cartilages.—*Its use* is to depress these Ribs.

25 *Twelve sets of Muscles* arise from and are inserted into the Vertebræ, the *Longus Colli*, the *Splenius Cervicis*, the *Obliquus Capitis Inferior*, the *Transversalis Colli*, the *Semi-Spinalis Colli*, the *Spinalis Dorsi*, the *Semi-Spinalis Dorsi*, the *Interspinales Colli*, the *Interspinales Dorsi et Lumborum*, the *Intertransversales Colli et Lumborum*, and the *Intertransversales Dorsi.*

26 THE LONGUS COLLI *arises* from the sides of the bodies of the three superior Dorsal Vertebræ, and from the roots of the Transverse Processes of the third, fourth, fifth, and sixth Cervical.—It is *inserted* anteriorly, into the bodies of all the Cervi-

Answ.

cal Vertebæ.—*Its use* is to bend the Neck forward, and somewhat laterally.

27 THE SPLENIUS CERVICIS *arises* from the Spinous Processes of the third and fourth Dorsal Vertebræ. —It is *inserted* into the Transverse Processes of the five superior Cervical Vertebræ.—*Its use* is to extend the Neck.

28 THE OBLIQUUS CAPITIS INFERIOR *arises* from the Spinous Process of the second Dorsal Vertebræ.—It is *inserted* into the Transverse Process of the first.—*Its use* is to rotate the head.

29 THE TRANSVERSALIS COLLI *arises* from the Transverse Processes of the five upper Dorsal Vertebræ, being situated between the Trachelo-Mastoideus, and the Splenius Cervicis and Cervicalis Descendens.—It is *inserted* into the Transverse Processes of the five middle Cervical Vertebræ.—*Its use* is to turn the Neck backward and somewhat laterally.

30 THE SEMI-SPINALIS COLLI *arises* from the Transverse Processes of the six upper Dorsal Vertebræ.—It is *inserted* into the Spinous Processes of the five middle Cervical Vertebræ.—*Its use* is to extend the Neck obliquely backward.

31 THE SPINALIS DORSI *arises* from the Spinous Processes of the two upper Lumbar, and three lower Dorsal Vertebræ.—It is *inserted* into the Spinous Processes of the second, third, fourth, fifth, sixth, seventh, eighth, and ninth Dorsal Vertebræ.—*Its use* is to extend the Spine.

32 THE SEMI-SPINALIS DORSI *arises* from the Transverse Processes of the seventh, eighth, ninth, and tenth Dorsal Vertebræ.—It is *inserted* into the Spinous Processes of the two inferior Cervical, and the seven upper Dorsal Vertebræ.—*Its use* is to extend the Spine obliquely.

33 THE INTERSPINALES COLLI *arise* from the Spinous Process of one Cervical Vertebræ, and are *inserted* into the Spinous Process of that next it.—*Their use* is to extend the Neck.

34 THE INTERSPINALES DORSI ET LUMBORUM seem rather Ligamentous than Muscular.

Answ.

35 The Intertransversales Colli et Lumborum *arise* from the Transverse Process of one Cervical or Lumbar Vertebræ, *inserted* into the Transverse Process of that next it.—*Their use* is to approximate these Processes.

36 The Intertransversales Dorsi also seem Ligamentous.

37 *Between the Ribs* are the *Intercostales Externi*, and *Intercostales Interni.*

38 The Intercostales Externi *arise* from the inferior edge of one Rib, between the Spine and its Cartilage.—It is *inserted* into the upper edge of another, their fibres running from behind forward. —*Their use* is to elevate the Ribs in inspiration.

39 The Intercostales Interni *arise* from the inferior edge of one Rib, between the Sternum and its Angle, and are *inserted* like that of the external. They run from before backward.—*Their use* is to elevate the Ribs in inspiration.

40 *One Muscle* arises from the Sternum, and is *inserted* into the Ribs, viz. The Sterno-Costalis, or Triangularis Sterni.

41 It *arises* from the edge of the Intercostales Interni, and of the inferior half of the middle bone of the Sternum.—It is *inserted* into the inferior edge of the Cartilages of the third, fourth, and fifth Ribs.—*Its use* is to depress the Cartilages and contract the Thorax.

42 *One Muscle* arises from the Vertebræ, and is *inserted* into the Pelvis, viz. The Psoas Parvus,

43 It *arises* laterally from the bodies of the two upper Lumbar Vertebræ.—It is *inserted* into the brim of the Pelvis, opposite the Acetabulum internally.—*Its use* is to aid in bending the loins.

44 *Two Muscles* arise from one part of the Pelvis, and are *inserted* into another, viz. The *Coccygeus* and *Curvator Coccygis.*

45 The Coccygeus *arises* from the Spine of the Ischium, and the inside of the lesser Sacro-Ischiatic Ligament.—It is *inserted* into the edge of the Os Coccygis.—*Its use* is to pull that bone forward.

46 The Curvator Coccygis *arises* internally from

the last Bone of the Os Sacrum, and the first of the Os Coccygis.—It is *inserted*, after having joined its fellow, into the second, third, but principally into the fourth bone of the Os Coccygis.—*Its use* is to curve the Os Coccygis.

SECTION XVI.

OF THE MUSCLES OF THE MALE ORGANS OF GENERATION AND ANUS.

1 *One Muscle* arises from the Obliquus Internus Abdominis, and is inserted into the Testicle, viz. THE CREMASTER,

2 It *arises* from the internal Oblique about the Abdominal Ring, through which it passes, and descends upon the Spermatic Cord.—It is *inserted* into the Tunica Vaginalis of the Testis.—*Its use* is to elevate the Testis.

3 That which was called *Dartos*, and supposed to be a Muscle of the Scrotum, appears to be merely condensed cellular Membrane.

4 *Three Muscles* arise from the Tuber Ischii, and are inserted about the Penis, viz. The *Erector Penis*, the *Transversus Perinei*, and *Transversus Perinei Alter*, arise from the Tuber Ischii, and are inserted about the Penis.

5 THE ERECTOR PENIS *arises* from the Tuber Ischii, and, in its ascent, surrounds the whole Crus Penis. —It is *inserted* near the union of the Crura Penis. —*Its use* is to direct, if not to erect the Penis.

6 THE TRANSVERSUS PERINEI *arises* from the Tuber Ischii, passing transversely inward and forward.—It is *inserted* into the Accelerator Urinæ, and the Sphincter Ani, where the above mentioned Muscle covers the bulb.—*Its use* is to dilate the bulb, while it draws up the verge of the Anus.

7 THE TRANSVERSUS PERINEI ALTER *arises* behind the Transversus Perinei, but runs more forward.—It is *inserted* into the Accelerator, where it covers

Answ.

the bulb anteriorly.—*Its use* is to assist the Transversus Perinei.

8 *One Muscle* arises from one part of the Penis, and is inserted into another, viz. The Accelerator Urinæ, or Ejaculator Seminis,

9 It *arises* from the Sphincter Ani, the membranous part of the Urethra, and Crus Penis.—It is *inserted* into the middle of the bulb, and completely incloses it.—*Its use* is to compress the bulb.

10 *One Muscle* arises from the Pubis, and is inserted about the prostate Gland, viz. The Compressor Prostatæ,

11 It *arises* above the Levator Ani from the internal part of the Os Pubis, between the lower part of the symphysis, and the upper part of the Foramen Ovale.—It is *inserted* between the Prostate and Rectum, having surrounded the former.—*Its use* is to compress the inferior part of the Prostate.

12 *Three Muscles* arise from the Pelvis, and are inserted about the Anus, viz. The *Levator Ani*, the *Sphincter Ani Externus*, and the *Sphincter Ani Internus*.

13 The Levator Ani *arises* from the Spine of the Ischium, from the Membrane covering the Coccygeus and Obturator Internus, from the junction of the Pubis and Ischium, and from the Pubis above the Foramen Thyroideum.—It is *inserted*, after surrounding the neck of the Bladder, Prostate, Vesiculæ Seminales, and the termination of the Rectum, into the Sphincter Ani, Acceleratores Urinæ, and tip of the Os Coccygis.—*Its use* is to elevate the Anus.

14 The Sphincter Ani Externus *arises* from the tip of the Os Coccygis, and surrounds the Anus.—It is *inserted* into the Perineum, Transversi Perinei, and Acceleratores Urinæ.—*Its use* is to shut the Anus, and to pull down the bulb of the Urethra.

15 The Sphincter Ani Internus may be considered as that part of the fibres of the Rectum which surrounds its extremity.

SECTION XVII.

OF THE MUSCLES OF THE FEMALE ORGANS OF GENERATION AND ANUS.

Answ.

1 *One Muscle* arises from the Ischium, and is inserted into the Clitoris, viz. The Erector Clitoridis,

2 It *arises* from the inner side of the Branch of the Ischium, and embraces the Crus of the Clitoris, as far up as the Os Pubis.—It is *inserted* into the upper part of the Crus and body of the Clitoris.—*Its use* is to draw the Clitoris downward and backward.

3 *One Muscle* arises from the Clitoris, and is inserted into the Vagina, viz. The Sphincter Vaginæ;

4 It *arises* from the union of the Crura Clitoridis.—It is *inserted* into the Sphincter Ani and sides of the Vagina, which it surrounds.—*Its use* is to contract the mouth of the Vagina.

5 *One Muscle* arises from the Tuber Ischii, and is inserted into the Perineum, viz. The Transversus Perinei;

6 It *arises* from the Cellular Membrane, and covers the Tuberosity of the Ischium.—It is *inserted* into the Perineum, between the Pudendum and Anus, and into the Sphincter Ani.—*Its use* is to sustain the Perineum.

7 *One Muscle* arises from the Tuber Ischii, and is inserted into the Vagina, viz. The Transversus Perinei Alter;

8 *Its origin* resembles that of the Transversus Perinei.—It is *inserted* into the side of the Vagina.—*Its use* is to assist the Transversus Perinei.

9 *One Muscle* arises from one Crus Clitoridis and is inserted into the other, viz. The Depressor Urethræ;

10 It *arises* from one Crus of the Clitoris, and involves the Urethra.—It is *inserted* into the other Crus of the Clitoris.—*Its use* is to depress the Urethra.

11 *Three Muscles* arise from the Pubis, and are inserted about the Anus, viz. The *Levator Ani*, the

Answ.

Sphincter Ani Externus, and *Sphincter Ani Internus.*

12 The **Levator Ani** *arises*, as in the Male, and descends along the inferior part of the Vagina and Rectum.—It is *inserted* into the Perineum, Sphincter Ani, and extremities of the Rectum and Vagina.—*Its use* is to elevate the Rectum and Vagina.

13 The **Sphincter Ani Externus** *arises* as in the Male, from the tip of the Os Coccygis, and surrounds the Anus.—It is *inserted* into the Perineum.—*Its use* is to shut the Rectum, and by pulling down the Perineum, to contract the Vagina.

14 The **Sphincter Ani Internus** exactly resembles that of the Male.

SECTION XVIII.

OF THE MUSCLES OF THE HEAD, FACE, &c.

1 The **Platysma Myoides**;

2 It *arises* from the Cellular Substance covering the Deltoid and Pectoral Muscles superiorly, and passes upward in a very thin layer almost immediately under the Cutis of the Neck.—It is *inserted* into the skin covering the lower jaw, between its angle and the chin, also into that covering the Masseter and Parotid Gland.—*Its use* is to approximate the portions of Integument into which it is inserted.

3 *Ten Muscles* of the Head arise from the Sternum, Ribs, or Vertebræ, viz. The *Sterno-Cleido-Mastoideus*, the *Rectus Capitis Anticus Major*, the *Rectus Capitis Anticus Minor*, the *Rectus Capitis Lateralis*, the *Splenius Capitis*, the *Complexus*, the *Trachelo-Mastoideus*, the *Rectus Capitis Posticus Major*, the *Obliquus Capitis Superior*, and the *Rectus Capitis Posticus Minor.*

4 The **Sterno-Cleido-Mastoideus** *arises* from the top of the Sternum laterally, and from the upper and anterior part of the Clavicle.—It is *inserted*

Answ.

into the Mastoid Process, and as far back as the Lambdoidal Suture.—*Its use* is to turn the Head on one side, and bend it forward.

5 The Rectus Capitis Anticus Major *arises* from the anterior parts of the Transverse Processes of the third, fourth, fifth, and sixth Cervical Vertebræ, by distinct commencements.—It is *inserted* into the Basilary Process of the occipital bone, just before the Condyles.—*Its use* is to bend the Head forward.

6 The Rectus Capitis Anticus Minor *arises* anteriorly from the first Vertebra of the Neck, opposite its superior oblique Processes.—It is *inserted* near the root of the Condyles of the Os Occipitis, further outward than the former Muscle.—*Its use* is to Nod the Head.

7 The Rectus Capitis Lateralis *arises* anteriorly, from the point of the Transverse Process of the first Vertebra of the Neck.—It is *inserted* into the ridge of the Os Occipitis external to the Condyles.—*Its use* is to bend the Head to one or the other side.

8 The Splenius Capitis *arises* from the five inferior Cervical Spines, and the Ligamentum Nuchæ. They recede from each other at the third Vertebra of the Neck, and show between them the Complexus.—It is *inserted* into the hollow of the Os Occipitis, below its transverse ridge, and externally to the Complexus, also into the Mastoid Process posteriorly.—*Its use* is to pull the Head backward and to one side.

9 The Complexus *arises* from the Transverse Processes of the four inferior Cervical, and seven superior Dorsal Vertebræ, also from the Spinous Process of the first Dorsal.—It is *inserted* into the hollow of the Os Occipitis below its Transverse Ridge.—*Its use* is to pull the Head laterally backward.

10 The Trachelo-Mastoideus *arises* from the Transverse Processes of the five inferior Cervical, and three superior Dorsal Vertebræ.—It is *inserted* into the middle of the posterior part of

Answ.

the Mastoid Process.—*Its use* is to pull the Head backward, but more laterally than the Complexus.

11 The Rectus Capitis Posticus Major *arises* from the external part of the Spine of the second Cervical Vertebra.—It is *inserted* into the Os Occipitis about an inch behind the Foramen Magnum. —*Its use* is to pull the Head backward, and a little laterally.

12 The Obliquus Capitis Superior *arises* from the Transverse Process of the first Cervical Vertebra.—It is *inserted* into the Os Occipitis externally, to the Rectus Capitis Posticus Major, and below the Complexus.—*Its use* is to pull the Head backward.

13 The Rectus Capitis Posticus Minor *arises* from the middle of the posterior arch of the Atlas.—It is *inserted* into a depression immediately behind the Foramen Magnum.—*Its use* is to pull the Head backward.

14 The *Occipito-Frontalis*, and the *Corrugator Supercilii*, arise from the Skull, and are inserted into the Integuments.

15 The Occipito-Frontalis *arises* posteriorly, from the Transverse Ridge of the Os Occipitis, becoming tendinous as it passes upward over the Cranium; it is connected to the Temporalis, the Attollens Aurem, and the Zygoma, and advancing to the brow it becomes again Muscular.—It is *inserted* into the Orbicularis, and the Skin of the Eyebrows.—*Its use* is to raise the Eyebrows, and to pull backward, or to wrinkle the Skin of the Head.

16 The Corrugator Supercilii *arises* from the Internal Angular Process of the Os Frontis, thence running outward and upward.—It is *inserted* internally into the inferior part of the Occipito-Frontalis. *Its use* is to draw the Eyebrows together, and to wrinkle the Skin of the Forehead Longitudinally.

17 The *Levator Palpebræ Superioris*, and *Orbicularis Palpebrarum*, arise from the Cranium, and are inserted into the Eyelids.

Answ.

18 The LEVATOR PALPEBRÆ SUPERIORIS *arises* from the upper part of the Foramen Opticum of the Os Sphœnoides, above the Levator Oculi.—It is *inserted* into the upper Eyelid.—*Its use* is to pull the Eyelid upward.

19 The ORBICULARIS PALPEBRARUM *arises* at the inner angle of the Eye from the outside of the Nasal Process of the Superior Maxillary Bone, and, surrounding the Eye externally—It is *inserted*, after having passed over the Lachrymal Sac, where it arose.—*Its use* is to shut the Eye, press the Eyeball, squeeze the Lachrymal Gland, and convey the tears toward the Puncta Lachrymalia.

20 *Six Muscles* arise from the Cranium, and are inserted into the Eyeball, viz. The *Levator Oculi*, *Adductor Oculi*, *Abductor Oculi*, *Trochlearis* or *Obliquus Superior*, and *Obliquus Inferior Oculi.*

21 The *Levator Oculi* arises from the upper part of the Foramen Opticum of the Sphœnoid Bone, beneath the Levator Palpebræ Superioris.—It is *inserted* into the Superior and Anterior part of the Sclerotic Coat.—*Its use* is to elevate the Ball of the Eye.

22 The DEPRESSOR OCULI *arises* from the Inferior part of the Foramen Opticum.—It is *inserted* opposite to the Levator Oculi.—*Its use* is to depress the Ball of the Eye.

23 The ADDUCTOR OCULI *arises* from the edge of the Foramen Opticum, between the Obliquus Superior and the Depressor.—It is *inserted* opposite to the inner Angle.—*Its use* is to Adduct or turn the Eye toward the Nose.

24 The ABDUCTOR OCULI *arises* from the outward edge of the Foramen Opticum.—It is *inserted* opposite to the outer Angle.—*Its use* is to turn the Eye toward the Temple.

25 The TROCHLEARIS or OBLIQUUS SUPERIOR *arises* from the edge of the Foramen Opticum, between the Levator and Adductor Oculi, thence, turning to the Cartilaginous Trochlea on the inside of the Internal Angular Process of the Os Frontis, it passes through it and turns its course downward, outward, and backward.—It is *inserted* into the

Answ.

Sclerotic Coat, half way between the insertion of the Levator and the Optic Nerve.—*Its use* is to roll the Ball of the Eye from above inwardly, to pull it forward, inward, and upward, and to turn the Pupil downward and outward.

26 The Obliquus Inferior Oculi *arises* from the outer edge of the Orbitar Process of the Superior Maxillary Bone, near the Depression for the Lachrymal Duct; running outward and backward, it is *inserted* into the Sclerotic Coat between the Abductor and the Optic Nerve. *Its use* is to roll the ball of the Eye from above outwardly, to pull it forward, inward, and downward, and to turn the Pupil upward and inward.

27 *Three* Muscles arise from the Cranium and are inserted into the External Ear: viz. the *Attollens Aurem*, *Anterior Auris*, and *Retrahens Aurem*.

28 The Attollens Aurem *arises* from the Tendon of the Occipito-Frontalis, where it covers the Temporal Aponeurosis. It is *inserted* superiorly, into the back of the Concha. *Its use* is to Elevate the Ear.

29 The Anterior Auris *arises* from the posterior part of the Zygoma. It is *inserted* Anteriorly into the back of the Helix. *Its use* is to pull the Ear forward.

30 The Retrahens Aurem *arises* often by three origins from the external part of the root of the Mastoid process. It is *inserted* posteriorly into the back edge of the Concha. *Its use* is to pull the Ear backward.

31 *Five Muscles*, viz. the *Helicis Major*, *Helicis Minor*, *Tragicus*, *Anti-Tragicus*, and *Transversus Auris* are wholly attached to the External Ear.

32 The Helicis Major *arises* from the acute process of the Helix. It is *inserted* into the Helix a little higher up. *Its use* is to contract that part of the Helix.

33 The Helicis Minor *arises* from the Inferior and Anterior part of the Helix nearer its edge than the former. It is *inserted* into the Helix a little higher up. *Its use* is to bring together the edges of a Fissure over which it passes.

Answ.

34 The TRAGICUS *arises* anteriorly from the middle of the Anterior edge of the Concha. It is *inserted* into the Tip of the Tragus. *Its use* is to pull the point of the Tragus forward.

35 The ANTI-TRAGICUS *arises* from the termination of the Anti-Helix. It is *inserted* into the tip of the Anti-Tragus. *Its use* is to approximate these points by shutting the Fissure between them.

36 The TRANSVERSUS AURIS *arises* from the superior and posterior edge of the back of the Concha. It is *inserted* superiorly into the back of the Fossa Navicularis, and posteriorly into the back of the Fossa Innominata. *Its use* is to approximate these Cavities.

37 *Four Muscles*, viz. the *Laxator Tympani Major*, *Laxator Tympani Minor*, *Tensor Tympani*, and *Stapedius*, are the Muscles of the Ossicula Auditus.

38 The LAXATOR TYMPANI MAJOR *arises* from the Styliform Process of the Sphœnoid bone, running backward it passes through the Fissura Glasseri. It is *inserted* into the Long process of the Malleus where it rests upon the same Fissure. *Its use* is to pull the Malleus and Membrana Tympani obliquely forward.

39 The LAXATOR TYMPANI MINOR *arises* from the Superior Posterior margin of the Meatus Auditorius, where the Membrana Tympani adheres to it, and descends inward and forward. It is *inserted* into the neck of the Malleus near its short process. *Its use* is to pull the Malleus and Membranæ Tympani forward and upward.

40 The TENSOR TYMPANI *arises* from the Cartilaginous end of the Eustachian Trumpet and Styliform Process of the Sphœnoid Bone, thence running back above the Osseous part of the Eustachian Tube within a thin Osseous Plate, it makes a turn forward into the Tympanum. It is *inserted* posteriorly into the handle of the Malleus below its long process. *Its use* is to pull the Malleus and Membrana Tympani inward.

41 The STAPEDIUS *arises* from a hollow Pyramid on the posterior side of the Tympanum, before the

lower end of the Fallopian Aqueduct. It is *inserted* into the posterior part of the Head of the Stapes. *Its use* is to pull the Stapes upward and backward.

42 The Compressor Naris is the only Muscle which

43 *Arises* from the superior part of the Cartilage of the Nose. It is *inserted* into its Inferior part. *Its use* is to compress the Alæ.

44 *Two Muscles*, viz. the *Levator Labii Superioris Alæque Nasi*, and *Depressor Labii Superioris Alæque Nasi*, arise from the Cranium, and are inserted into the Nose and Lips.

45 The Levator Labii Superioris Alæque Nasi, *arises* by two commencements, one from the external edge of the Orbital Process of the Superior Maxillary Bone, the other from the upper part of its Nasal Process. It is *inserted* first into the upper Lip and Orbicularis Labiorum, and secondly into the upper Lip and outer part of the Ala Nasi. *Its use* is to elevate the upper Lip and Ala Nasi.

46 The Depressor Labii Superioris Alæque Nasi *arises* from the depression of the Os Maxillare Superius above the Dentes Incisivi and Caninus, thence running up under the Levator;—it is *inserted* into the upper Lip and root of the Ala Nasi. *Its use* is to draw the upper Lip and Ala Nasi downward and backward.

47 The Nasalis Labii Superioris is the only Muscle which

48 *Arises* from the Tip and Septum of the Nose; enlarging and descending obliquely outward;—it is *inserted* into the Orbicularis Oris. *Its use* is to bring closer the Angles of the Mouth, or to depress the Tip of the Nose.

49 *Six Muscles*, viz. the *Depressor Labii Inferioris*, *Levator Labii Inferioris*, *Depressor Anguli Oris*, *Buccinator*, *Zygomaticus Major*, and *Zygomaticus Minor*, all are attached to the Cranium and inserted into the Lips.

50 The Depressor Labii Inferioris *arises* anteriorly, from the inferior part of the lower Jaw. It is *inserted* into the edge of the under Lip.—Its *use* is to depress the under Lip.

Answ.

51 The Levator Labii Inferioris *arises* from the depression of the Os Maxillare Inferius, below the Dentes Incisivi and Caninus.—It is *inserted* into the under Lip and skin of the Chin.—Its *use* is to pull these parts upward.

52 The Depressor Anguli Oris *arises* from the inferior edge of the Maxilla Inferior, by the side of the Chin; it is connected externally to the Integuments and to the Platysma Myoides, and internally to the Depressor Labii Inferioris, becoming gradually narrower.—It is *inserted* into the angle of the Mouth. Its *use* is to pull down the angle of the Mouth.

53 The Buccinator *arises* from the upper Jaw, behind its Dens Sapientiæ, where it is connected with the Constrictor Pharyngis Superior, and from the lower Jaw, as far back as its Dens Sapientiæ and the root of its Coronoid Process.—It is *inserted* into the angle of the Mouth, within the Orbicularis Oris.—Its *use* is to pull the angle of the Mouth backward, and to press the Chin inward.

54 The Zygomaticus Major *arises* from the Zygomatic process of the Os Malæ.—It is *inserted* into the angle of the Mouth.—Its *use* is to draw upward and outward the corner of the Mouth.

55 The Zygomaticus Minor *arises* from above the origin of the Zygomaticus Major.—It is *inserted* into the upper Lip, near the corner of the Mouth.—Its *use* is to draw upward and outward the corner of the Mouth.

56 The Orbicularis Oris,

57 *Arises* from the other Muscles of the Lips, the superior fibres descending, the inferior ascending, and decussating each other about the angle of the Mouth.—It is *inserted* into fibres from the opposite side.—Its *use* is to shut the Mouth and compress the Lips.

58 The Anomalus Maxillæ Superioris,

59 *Arises* from the upper part of the fossa of the Cuspidatus of the upper Jaw.—It is *inserted* below the origin of the first portion of the Levator Labii Superioris Alæque Nasi.—Its *use* is to act only on the

Answ.

vessels and nerves from the attachment of both its ends to one bone.

60 *Five Muscles*, viz. the *Temporalis*, *Masseter*, *Pterygoideus Externus*, *Pterygoideus Internus*, and *Digastricus*, arise from the Cranium, and are inserted into the lower Jaw.

61 The TEMPORALIS *arises* from the Temporal ridge, and depression of the Os Frontis and Os Parietale, from the Temporal process of the Sphœnoid Bone, and from the Aponeurosis which covers it.—It is *inserted* around the Coronoid process of the lower Jaw.—Its *use* is to pull the lower Jaw upward and backward.

62 The MASSETER *arises* from the superior Maxillary Bone, where it joins the Os Malæ, and from the inferior and interior part of the Zygoma throughout its length, the external Fibres starting backward, the internal forward.—It is *inserted* into the outside of the Angle and Ramus of the lower Jaw.—Its *use* is to elevate the lower Jaw, and to pull it a little forward or backward.

63 The PTERYGOIDEUS EXTERNUS *arises* from the outside of the external Pterygoid process of the Sphœnoid Bone, from part of the Tuberosity of the Os Maxillare, and from the root of the Temporal process of the Os Sphœnoides.—It is *inserted* into a Cavity on the anterior part of the neck of the Condyloid process of the lower Jaw, and into the Capsular Ligament of the Joint.—Its *use* is to pull the Jaw forward and to the opposite side, and to pull the Ligament from the Joint.

64 The PTERYGOIDEUS INTERNUS *arises* from the Pterygoid Fossa of the Sphœnoid and Palate Bones.—It is *inserted* into the angle of the lower Jaw internally.—Its *use* is to pull the Jaw upward, and toward the other side.

65 The DIGASTRICUS *arises* from the deep Fossa at the root of the Mastoid process of the Temporal Bone, becoming tendinous in its middle it perforates the Stylo-Hyoideus, and is fixed by a Ligament to the Os Hyoides and again ascends.—It is *inserted* into a

Answ. rough Sinuosity at the inferior edge of the Chin.—Its *use* is to depress the lower Jaw and open the Mouth; but, when the Jaw is fixed, to raise the Larynx and Pharynx in deglutition.

SECTION XIX.

OF THE LARYNX AND PHARYNX.

A General Description of these Parts must precede that of the Muscles of the Organs of Voice and Deglutition.

LARYNX.

1 The Larynx is the Organ of Voice.

2 It is *situated* at the upper and fore part of the Neck, at the root of the Tongue, just below the Os Hyoides.

3 It is *composed* chiefly of Cartilages and Ligaments, which, when united, form a hollow body permanently open.

4 Its Cartilages are *five*, namely, the *Thyroid*, the *Cricoid*, the *two Arytænoid*, and *Epiglottis*.

5 The Thyroid Cartilage is *placed* at the anterior part of the Larynx;

6 It *consists* of *two Alæ*, which form a projecting angle forward, and then slope backward. Its *superior edge* has a notch in the middle that may be easily felt, and elevations on each side, and terminates in two *Cornua* posteriorly, which ascend. Its *inferior edge* is straight and terminates also in two *shorter Cornua*, which bend downward. Its *posterior edges* are entirely straight, and on the outer side of each Ala a *line* runs from a small knob near its upper corner forward and downward, to terminate in another.

7 The Cricoid Cartilage is *placed* at the lower part of the Larynx, its broadest side being backward,

8 The *outer surface* of its *posterior side* has upon it a longitudinal line, and depressions on each side of it for the attachment of Muscles. *The top* of the same

side slopes downward and outward, terminating in *angles*, which are smooth for connexion with the Arytænoid Cartilages, and from these angles elevated lines descend to terminate in smooth surfaces, for the lower Cornua of the Thyroid Cartilage.

9 The ARYTÆNOID CARTILAGES are *placed* posteriorly upon the greater side of the Cricoid Cartilage;

10 They are somewhat of a pyramidal *form*, but their *posterior side* is concave, their *anterior* convex, their *external edge* oblique, and their *internal one* straight. Their *bases* rest on the Cricoid Cartilage, with which they have a movable connexion.

11 The EPIGLOTTIS is *placed* anteriorly above the other Cartilages;

12 It is narrower, but somewhat thick at *its base*, and its *superior part* is thin, flat, and flexible with *convex edges*, and it is also convex *posteriorly*, and concave *anteriorly*.

13 A short LIGAMENT connects the body of the Os Hyoides to the notch of the Thyroid Cartilage, from which a *Ligament* proceeds to the Epiglottis, and *another* from the Epiglottis to the body of the Os Hyoides, thus leaving behind them a triangular space. *Ligaments* also connect the Cornua of the Os Hyoides to those of the Thyroid Cartilage, and the *lateral Ligaments* of the Epiglottis are attached to the tops of the Arytænoid Cartilages. The inferior Cornua of the Thyroid Cartilage are likewise connected to the lower articular surfaces of the Cricoid by *short Ligaments*, and the inferior edge of the one is also connected to the superior part of the other. The Cricoid Cartilage is connected by *Ligaments* to the bases of the Arytænoid Cartilages above, and to the first ring of the Trachea below.

14 The GLOTTIS is an opening, *formed* between two *small Ligaments* which proceed from the middle of the posterior side of the Thyroid Cartilage to the bases of the Arytænoid Cartilages, and immediately beneath these *two other Ligaments* are placed; the superior and inferior Ligaments on each side leave

Answ.

a narrow fissure between them, which is the opening of a small Sac.

15 The Larynx forms the chief part of the organ of voice, and affords a passage permanently open for respiration; it also gives attachment to numerous muscles.

PHARYNX.

16 The **Pharynx** is a membranous and muscular bag expanded above, contracted below, and terminating in the *Gullet*, or *Œsophagus.*

17 It is *placed* behind the Mouth, Nares, and Larynx, below the Cuneiform process of the Os Occipitis, before the Cervical Vertebræ, and above the Œsophagus.

18 It is *composed* of circular muscular fibres, and of a membrane copiously supplied with mucous Glands.

19 It is *divided* into three portions, a *superior*, which is called its *Arch;* a *middle*, which is its *Body;* and an *inferior*, which is its *Sphincter.*

20 Its *upper part* is extremely wide, extending almost all the way between the Styloid processes; it then contracts on each side, and behind the upper part of the Larynx, again expanding behind the Larynx and before the Atlas, it forms considerable folds.

21 It is chiefly useful in Deglutition, receives the food, and transmits it to the Œsophagus.

SECTION XX.

OF THE MUSCLES OF THE ORGANS OF VOICE AND DEGLUTITION.

1 *Four Muscles*, viz. the *Digastricus*, *Stylo-Hyoideus*, *Mylo-Hyoideus*, and *Genio-Hyoideus*, arise from the Cranium, and are inserted into the Larynx.

2 The **Digastricus** has already been described.

3 The **Stylo-Hyoideus** *arises* from the middle and inferior part of the Styloid process; it is *inserted* into the lateral and inferior part of the body of the Os Hyoides, below its middle its fibres separate to

Answ.

allow the passage of the Tendon of the Digastricus. Its *use* is to pull the Os Hyoides upward and to one side.

4 The MYLO-HYOIDEUS *arises* from a line on the inside of the lower Jaw, between the last Dens Molaris, and the middle of the Chin, where it joins its fellow.—It is *inserted* into the middle of the base of the Os Hyoides and its fellow.—Its *use* is to pull the Os Hyoides forward, upward, and laterally.

5 The GENIO-HYOIDEUS *arises* from a rough protuberance in the middle of the inside of the Chin.—It is *inserted* into the middle of the upper part of the Os Hyoides.—Its *use* is to pull the Os Hyoides forward and upward, and assist in depressing the lower Jaw.

6 *Two Muscles*, viz. the *Sterno-Hyoideus*, and *Sterno-Thyroideus*, arise from the Trunk and are inserted into the Larynx.

7 The STERNO-HYOIDEUS *arises* from the junction of the Sternum and Clavicle, and from the Cartilage of the first Rib.—It is *inserted* into the middle of the lower part of the basis of the Os Hyoides.—Its *use* is to pull the Os Hyoides downward.

8 The STERNO-THYROIDEUS *arises* from the edge of the upper bone of the Sternum, opposite the Cartilage of the first Rib internally.—It is *inserted* into the rough line at the external part of the lower edge of the Thyroid Cartilage.—Its *use* is to pull the Thyroid Cartilage downward.

9 The OMO-HYOIDEUS,

10 It *arises* from about the Semilunar Notch of the superior Costa of the Scapula, ascending upward and forward behind the Sterno-Cleido-Mastoideus, it becomes tendinous and again grows fleshy.—It is *inserted* into the sides of the lower part of the basis of the Os Hyoides.—Its *use* is to pull the Os Hyoides obliquely downward.

11 *Nine Muscles* have both origin and insertion on the Larynx, viz. the *Thyreo-Hyoideus*, *Musculus Glandulæ Thyroideæ*, *Crico-Thyroideus*, *Crico-Arytænoideus Posticus*, *Crico-Arytænoideus Lateralis*, *Thyreo-Arytænoideus Major*, *Thyreo-Arytænoideus Mi-*

Answ.

nor, *Arytænoideus Obliquus*, and *Arytænoideus Transversus*.

12 The THYREO-HYOIDEUS *arises* from a rough line upon the external part of the Thyroid Cartilage.—It is *inserted* into part of the basis and all the Cornu of the Os Hyoides externally.—Its *use* is to pull the Os Hyoides downward, or the Thyroid Cartilage upward.

13 The MUSCULUS GLANDULÆ THYROIDEÆ *arises* from the lower edge of the basis of the Os Hyoides, and crosses the Thyroid Cartilage.—It is *inserted* into the middle of the Thyroid Gland.—Its *use* is to pull the Gland toward the Os Hyoides.

14 The CRICO-THYROIDEUS *arises* from the anterior and lateral parts of the Cricoid Cartilage, and runs obliquely upward and outward.—It is *inserted* by two terminations, one into the base of the Thyroid Cartilage, the other into its inferior Cornu.—Its *use* is to pull downward and forward the Thyroid, or upward and backward the Cricoid.

15 The CRICO-ARYTÆNOIDEUS POSTICUS *arises* from the posterior part of the Cricoid Cartilage.—It is *inserted* posteriorly into the base of the Arytænoid.—Its *use* is to pull back the Arytænoid Cartilages, and to open the Rima Glottidis.

16 The CRICO-ARYTÆNOIDEUS LATERALIS *arises* from the side of the Cricoid Cartilage, where it is covered by the Thyroid.—It is *inserted* into the side of the base of the Arytænoid.—Its *use* is to open the Rima Glottidis.

17 The THYREO-ARYTÆNOIDEUS MAJOR *arises* from the inferior and posterior part of the body of the Thyroid Cartilage, running upward and backward along the side of the glottis.—It is *inserted* into the Arytænoid Cartilage above and before the Crico-Arytænoideus Lateralis.—Its *use* is to pull forward the Arytænoid towards the middle of the Thyroid, and to relax the Glottis.

18 The THYREO-ARYTÆNOIDEUS MINOR *arises* from the Thyroid Cartilage, near its Incisura Cordiformis.—It is *inserted* into the Arytænoid Cartilage.—Its

Answ.

use is the same as that of the Thyreo-Arytænoideus Major.

19 The ARYTÆNOIDEUS OBLIQUUS *arises* from the base of one Arytænoid Cartilage, and crosses its fellow. —It is *inserted* into the tip of the other Arytænoid Cartilage.—Its *use* is to approximate the Arytænoid Cartilages.

20 The ARYTÆNOIDEUS TRANSVERSUS.

21 It *arises* from the side of one Arytænoid Cartilage.—It is *inserted* into the side of the other Arytænoid Cartilage.—Its *use* is to shut the Rima Glottidis.

22 *Two Muscles*, viz. the *Genio-Glossus* and *Stylo-Glossus*, arise from the Cranium, and are inserted into the Tongue.

23 The GENIO-GLOSSUS *arises* from a rough point on the inside of the middle of the Chin, and its fibres run forward, upward and backward.—It is *inserted* into the tip, middle and root of the Tongue, slightly also into the base of the Os Hyoides laterally.—Its *use* is to draw the tip of the Tongue back, its middle down, or to make its Dorsum concave; to draw also the Os Hyoides forward, and to thrust the tongue out of the mouth.

24 The STYLO-GLOSSUS *arises* from the Styloid process, and the lateral Ligament of the lower Jaw.—It is *inserted* into the root and sides of the Tongue.—Its *use* is to pull the Tongue to a side and backward.

25 The HYO-GLOSSUS

26 *Arises* from the base, cornu and appendix of the Os Hyoides—It is *inserted* into the side of the Tongue. —Its *use* is to pull the Tongue inward and downward.

27 The LINGUALIS

28 *Arises* from the side of the root of the Tongue, and runs forward between the Hyo and Genio Glossus. —It is *inserted* into the tip of the Tongue.—Its *use* is to contract the Tongue in length.

29 *Three Muscles* arise from the Cranium, and are inserted into the Palate, viz. the *Circumflexus*, or *Tensor Palati*, and *Levator Palati*.

30 The CIRCUMFLEXUS, or TENSOR PALATI, *arises*

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from the Styliform process of the Sphœnoid Bone, and from the Osseous part of the Eustachian Tube; it runs down along the Pterygoideus Internus, passes over the hook of the internal Pterygoid process, and spreads into a broad Membrane.—It is *inserted* into the Velum Pendulum Palati, and the semilunar edge of the Palate bone; its posterior Fibres sometimes join the Constrictor Pharyngis Superior and Palato-Pharyngeus.—Its *use* is to draw the Velum downward, and to stretch it laterally.

31 The LEVATOR PALATI *arises* from the extremity of the Petrous Portion of the Temporal bone, and from the Membranous part of the Eustachian Tube. —It is *inserted* into the Velum Pendulum Palati as far as the Uvula.—Its *use* is to draw the Velum upward and backward, and so shut the passage from the Fauces to the Nose.

32 *Three Muscles*, viz. the *Thyreo-Epiglottideus Major*, *Thyreo-Epiglottideus Minor*, and *Arytæno-Epiglottideus*, arise from the Larynx, and are inserted into the Epiglottis.

33 The THYREO-EPIGLOTTIDEUS MAJOR *arises* by a few Fibres from the Thyroid Cartilage.—It is *inserted* into the Epiglottis laterally.—Its *use* is to draw downward and to expand the Epiglottis.

34 The THYREO-EPIGLOTTIDEUS MINOR *arises* just above the Thyreo-Epiglottideus Major.—It is *inserted* into the side of the Epiglottis, above its root. —Its *use* is to draw downward, and to expand the Epiglottis.

35 The ARYTÆNO-EPIGLOTTIDEUS *arises* from the lateral and upper part of the Arytænoid Cartilage; it runs along the outside of the external Rima.—It is *inserted* into the Epiglottis along with the Thyreo-Epiglottideus Minor.—Its *use* is to pull the Epiglottis upon the Rima.

36 The AZYGOS UVULÆ

37 *Arises* from the extremity of the Suture of the Palate bones, and runs down the Velum and Uvula.—It is *inserted* into the tip of the Uvula.—Its *use* is to elevate the Uvula.

38 The CONSTRICTOR ISTHMI FAUCIUM

Answ.

39 *Arises* from the side of the Tongue, near its root, and runs upward within the anterior arch, before the Amygdala.—It is *inserted* anteriorly, into the middle of the Velum, at the root of the Uvula, being there connected with its fellow, and with the Palato-Pharyngeus.—Its use is to pull the Velum and the root of the Tongue toward each other, so contracting the passage between the two arches, and shutting the opening into the Fauces.

40 *Two Muscles* arise from the Cranium, and are inserted into the Pharynx, viz. the *Stylo-Pharyngeus*, and *Constrictor Pharyngis Superior.*

41 The STYLO-PHARYNGEUS *arises* from the root of the Styloid process.—It is *inserted* into the side of the Pharynx, and back of the Thyroid Cartilage.—Its *use* is to dilate and to elevate the Pharynx and Thyroid Cartilage.

42 The CONSTRICTOR PHARYNGIS SUPERIOR *arises* from the Cuneiform process of the Os Occipitis, near the Anterior Condyloid Foramina; from the Pterygoid process of the Sphœnoid bone, from the upper and under Jaw, near the Dentes Sapientiæ; being connected at this point with the Buccinator, and with fibres from the Tongue and Palate.—It is *inserted* into a white line in the middle of the posterior part of the Pharynx, being covered by the Constrictór Medius.—Its *use* is to compress the upper part of the Pharynx, and to draw it upward and forward.

43 *Two Muscles*, viz. The *Constrictor Pharyngis Medius*, and *Constrictor Pharyngis Inferior*, arise from the Larynx, and are inserted into the Pharynx.

44 The CONSTRICTOR PHARYNGIS MEDIUS *arises* from the appendix and cornu of the Os Hyoides, and from the Ligament connecting it to the Thyroid Cartilage.—It is *inserted* into the white line on the back of the Pharynx, its upper fibres being connected to the Cuneiform process of the Occipital Bone.—Its *use* is to compress the Pharynx, and to draw it and the Os Hyoides upward.

45 The CONSTRICTOR PHARYNGIS INFERIOR *arises* laterally from the Thyroid Cartilage, near the attach-

Answ.

ment of the Sterno and Thyreo Hyoidei; also from the Cricoid Cartilage, near the Crico-Thyroideus; being the largest of the three Constrictors.—It is *inserted* into the white line on the back of the Pharynx, its superior fibres covering half the Constrictor Medius, and its inferior the commencement of the Œsophagus.—Its *use* is to compress the Pharynx, and to raise it and the Larynx upward.

46 The Palato-Pharyngeus *arises* posteriorly from the middle of the Velum Pendulum Palati at the root of the Uvula, and also from the tendinous expansion of the Tensor Palati. Passing behind the Amygdala, and within the posterior arch, its fibres run back to the sides and upper part of the Pharynx.—It is *inserted* into the posterior and upper edge of the Thyroid Cartilage, and between the inferior Constrictors and the Pharynx.—Its *use* is powerfully to contract the Fauces.

SECTION XXI.

MUSCLES OF THE UPPER EXTREMITY.

× 1 *Six Muscles*, viz. the *Pectoralis Minor*, *Angularis Scapulæ*, *Trapezius*, *Rhomboideus*, *Serratus Magnus*, and *Subclavius*, arise from the Trunk and are inserted into the Shoulder.

2 The Pectoralis Minor *arises* tendinous and fleshy from the upper edge of the third, fourth and fifth ribs near their Cartilages.—It is *inserted* by a short Tendon into the Coracoid Process of the Scapula.—Its *use* is to pull the Scapula forward and downward.

3 The Angularis Scapulæ *arises* from the Transverse processes of the five superior Vertebræ of the Neck.—It is inserted into the superior angle of the Scapula.—Its *use* is to elevate the base of the Scapula.

× 4 The Trapezius *arises* from the Spine and transverse ridge of the Occiput, the Ligamentum Nuchæ, the Spinous processes of the two Inferior Vertebræ of the Neck, and from all those of the back.—It is *inserted* into the posterior half of the Clavicle, the Acromion and almost all the Spina Scapulæ.—Its *use* is to pull the Scapula upward and backward, or backward and downward.

5 The Rhomboideus *arises* from the Spinous processes of the three inferior Vertebræ of the Neck, the Ligamentum Nuchæ and the five superior of the back.—It is *inserted* into all the base of the Scapula.—Its *use* is to draw the Scapula inward and upward.

6 The Serratus Magnus *arises* from the nine superior Ribs, by as many Digitations.—It is *inserted* into all the inner edge of the base and angles of the Scapula.—Its *use* is to pull the Scapula forward.

7 The Subclavius *arises* from the Cartilage of the first Rib.—It is *inserted* into almost all the inferior side of the Clavicle.—Its use is to pull the Clavicle downward.

8 *Two Muscles*, viz. the *Pectoralis Major*, and *Latissimus Dorsi*, arise from the Trunk, and are inserted into the Humerus.

9 The Pectoralis Major *arises* from the Cartilages of the fifth and sixth ribs, where its fibres mix with those of the Obliquus Externus Abdominis, from almost all the length of the Sternum, and from more than half the anterior edge of the Clavicle.—It is *inserted* by two broad tendons which cross each other into the outer ridge of the Bicipital Groove.—Its *use* is to move the arm upward and inward.

10 The Latissimus Dorsi *arises* from the posterior part of the Crista Ilii, from all the Sacral and Lumbar Vertebral Spines, and from the seven inferior Dorsal; and by digitations from the three or four inferior ribs; passing over the inferior angle of the Scapula, it turns before the Teres Major.—It is *inserted* into the inner edge of the Bicipital Groove.—Its *use* is to pull the arm backward and downward, and to rotate the Humerus.

11 *Seven Muscles* arise from the Scapula, and are in-

Answ. serted into the Humerus, viz. the *Deltoides*, *Coraco-Brachialis*, *Supra-Spinatus*, *Infra-Spinatus*, *Teres Minor*, *Teres Major*, and *Subscapularis*.

×12 The DELTOIDES *arises* from that anterior portion of the Clavicle which is unoccupied by the Pectoralis Major, from the Acromion and inferior edge of the Spina Scapulæ.—It is *inserted* into an extensive roughness on the middle of the outside of the Humerus.—Its *use* is to pull the arm upward and forward, directly upward, or upward and backward.

13 The CORACO-BRACHIALIS *arises* from the tip of the Processus Coracoides adhering to the short head of the Biceps.—It is *inserted* into the middle of the internal part of the Humerus.—Its *use* is to raise the arm and move it forward.

14 The SUPRA-SPINATUS *arises* from all the Supra-Spinal Fossa of the Scapula; passing under the Acromion, it adheres to the Capsular Ligament of the Shoulder.—It is *inserted* into the superior depression of the Tuberosity on the outside of the Bicipital Groove.—Its *use* is to raise the Arm and the Capsular Ligament.

15 The INFRA-SPINATUS *arises* from all the Infra-Spinal Fossa Scapulæ, and adheres to the Capsular Ligament.—It is *inserted* into the middle depression of the same Tuberosity.—Its *use* is to raise the Humerus, and to rotate it outward.

16 The TERES MINOR *arises* from the Costa Inferior Scapulæ, and adheres to the Capsular Ligament.—It is *inserted* into the inferior depression of the same Tuberosity.—Its *use* is to draw the Humerus backward, and to rotate it outward.

17 The TERES MAJOR *arises* from the outside of the inferior angle of the Scapula, and adheres to the Capsular Ligament.—It is *inserted* into the inner edge of the Bicipital Groove.—Its *use* is to draw the Humerus backward, and to rotate it inward.

18 The SUBSCAPULARIS *arises* from all the inside of the Scapula, and adheres to the Capsular Ligament.—It is *inserted* into the internal Tuberosity at the head of the Humerus.—Its *use* is to rotate the Hu-

merus inward, and to bring it to the side of the body.

19 *Two Muscles*, viz. the *Biceps Cubiti*, and *Long Head of the Triceps*, arise from the shoulder, and are inserted into the fore-arm.

20 The **Biceps Cubiti** *arises* by two heads; one from the superior Margin of the Glenoid Cavity, it passes through the Capsular Ligament of the Shoulder, over the head of the Humerus, and through the groove between the Tuberosities; the other, or short head, *arises* conjoined with the Coraco-**Brachialis**, from the Coracoides Scapulæ; both heads unite at the middle of the Humerus.—It is *inserted* into the Tuberosity on the inner side of the upper end of the Radius.—Its *use* is to supinate the hand, to bend the Fore arm, and to raise the arm.

21 The **Triceps**, as its name implies, has three distinct heads, of which the middle one is the longest. The **First**, or **Long Head of the Triceps**, *arises* from the Inferior Costa Scapulæ, near its Cervix.—It is *inserted* into the Olecranon of the Ulna. —Its *use* is to extend the fore-arm, and to carry the arm backward.

22 *Six Muscles*, viz. the *Shorter Heads of the Triceps*, the *Anconeus*, *Brachialis Internus*, *Supinator Radii Longus*, *Supinator Radii Brevis*, and *Pronator Radii Teres*, arise from the Humerus, and are inserted into the Fore-arm.

23 The **Shorter Heads of the Triceps.** The *second*, or most external, *arises* from the back of the Humerus, near its upper end; and the *third*, which is the shortest, from the back of the Humerus lower down, and from the Inter-Muscular Ligament.—They form one Muscle with the Long Head; and their common *insertion* is into the Olecranon Ulnæ.—The *use* of the Triceps is to extend the fore-arm.

24 The **Anconeus** *arises* from the posterior part of the external Condyle of the Humerus.—It is *inserted* into a ridge on the outer and posterior part of the upper end of the Ulna.—Its *use* is to extend the fore-arm.

Answ.

25 The Brachialis Internus *arises* from the middle of the Os Humeri, around the insertion of the Deltoid, and from the Intermuscular Ligament; passing over the Capsular Ligament of the Elbow Joint.—It is *inserted* into the Coronoid process of the Ulna.—Its *use* is to bend the fore-arm, and to pull upward the Capsular Ligament.

26 The Supinator Radii Longus *arises* from the ridge above the external Condyle of the Os Humeri, as far up as the middle of the bone.—It is *inserted* into the outer side of the inferior end of the Radius. Its *use* is to bend the Elbow Joint, and to supinate the Hand.

27 The Supinator Radii Brevis *arises* from the external Condyle of the Os Humeri, and from the external upper part of the Ulna, adhering to the Capsular Ligament.—It is *inserted* into the Neck and Tubercle of the Radius, and into the ridge running from that downward and outward.—Its *use* is to supinate the Hand.

28 The Pronator Radii Teres *arises* from the Internal Condyle of the Humerus, and likewise from the Coronoid process of the Ulna.—It is *inserted* into the middle of the outside of the Radius.—Its *use* is to pronate the Hand.

X 29 *Six Muscles* arise from the Humerus, and are inserted into the Hand, viz. the *Flexor Carpi Ulnaris*, *Palmaris Longus*, *Flexor Carpi Radialis*, *Extensor Carpi Radialis Longior*, *Extensor Carpi Radialis Brevior*, and *Extensor Carpi Ulnaris*.

30 The Flexor Carpi Ulnaris *arises* from the inner Condyle of the Humerus, the outer side of the Olecranon, and the Fascia of the Fore-arm.—It is *inserted* into the Os Pisiforme, and Metacarpal Bone of the little Finger.—Its *use* is to bend the arm and wrist joints.

31 The Palmaris Longus *arises* from the inner Condyle of the Humerus.—It is *inserted* into the Carpal Ligament, and Aponeurosis Palmaris.—Its *use* is to bend the Wrist, and to stretch the Aponeurosis.

32 The Flexor Carpi Radialis *arises* from the inner Condyle of the Humerus, and from the upper end

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of the Ulna anteriorly; adhering to the Capsular Ligament,—it is *inserted* anteriorly, into the upper end of the Metacarpal Bone of the Fore finger, having passed through a groove of the Trapezium. —Its *use* is to bend the Wrist and Elbow Joints.

33 The **Extensor Carpi Radialis Longior** *arises* from the lower part of the external ridge of the Humerus, above its external Condyle.—It is *inserted* posteriorly, into the upper end of the Metacarpal Bone of the Forefinger.—Its *use* is to extend the Wrist Joint, and occasionally to bend the Elbow Joint.

34 The **Extensor Carpi Radialis Brevior** *arises* from the external Condyle of the Humerus, and from the external lateral Ligament of the Elbow Joint.—It is *inserted* posteriorly, into the upper part of the Metacarpal Bones of the fore and middle Fingers.—Its *use* is to extend the Wrist Joint.

35 The **Extensor Carpi Ulnaris** *arises* from the external Condyle of the Humerus, and from the middle of the Ulna, through the groove, at the extremity of which it passes.—It is *inserted* posteriorly, into the upper end of the Metacarpal Bone of the little Finger.—Its *use* is to extend the Wrist Joint.

χ 36 *Three Muscles*, viz. the *Flexor Digitorum Sublimis Perforatus*, *Flexor Longus Pollicis*, and *Extensor Digitorum Communis* arise from the Humerus, and are inserted into the Fingers.

37 The **Flexor Digitorum Sublimis Perforatus** *arises* from the inner Condyle of the Humerus, the Coronoid process of the Ulna, the Tuberosity of the Radius, and the middle of the Fore part of the Radius: it sends off four Tendons.—It is *inserted* anteriorly into the upper end of all the bones of the second Phalanx, dividing near the ends of the first bones for the passage of the Tendons of the Perforans.—Its *use* is to bend the first and second joints of the Fingers, the Wrist, and the Elbow Joint.

38 The **Flexor Longus Pollicis** *arises* from the inner Condyle of the Humerus, and from the anterior side of the Radius below the Tuberosity.—It is

inserted into the last bone of the Thumb.—Its *use* is to bend the last Joint, and also the Wrist Joint.

39 The EXTENSOR DIGITORUM COMMUNIS *arises* from the external Condyle of the Humerus, adhering to the Supinator Brevis; it divides into four Tendons, which are connected by small transverse ones upon the back of the hand.—It is *inserted* into the posterior part of all the bones of the Fingers.—Its *use* is to extend all the joints of the Fingers, the Wrist, and the Elbow Joint.

40 The FLEXOR DIGITORUM PROFUNDUS PERFORANS,

41 *Arises* from the upper, anterior and outer part of the Ulna, and from part of the Interosseous Ligament.—It is *inserted*, after passing behind the Flexor Sublimis and Annular Ligament, (its Tendons perforating those of the above mentioned Muscle,) anteriorly into the root of the last bone of each finger.—Its *use* is to bend the joints of the Fingers and the Wrist Joint.

42 The LUMBRICALES are four in number, of these

43 Each *arises* from the outside of the Tendons of the Flexor Profundus.—It is *inserted* into the inside of first joint of the finger, and into the back of each of the other joints.—Their *use* is to Adduct these fingers, to bend their first joint and to extend the rest.

44 *Five Muscles*, viz. the *Extensor Ossis Metacarpi Pollicis*, *Extensor Primi Internodii Pollicis*, *Extensor Secundi Internodii Pollicis*, *Flexor Longus Pollicis*, and *Indicator*, arise from the Fore arm, and are inserted into the Fingers.

45 The EXTENSOR OSSIS METACARPI POLLICIS *arises* posteriorly from the middle of the Ulna, from the middle of the Radius, and from the Interosseous Ligament.—It is *inserted* into the Trapezium and Metacarpal Bone of the Thumb.—Its *use* is to extend the Wrist Joint, and the Metacarpal Bone of the Thumb.

46 The EXTENSOR PRIMI INTERNODII POLLICIS *arises* from the posterior part of the Ulna and the Interosseous Ligament.——It is *inserted* into the back of the first and second bones of the Thumb.—Its *use* is to extend the Wrist, the Metacarpal and the first bone of the Thumb.

Answ.

47 The Extensor Secundi Internodii Pollicis *arises* posteriorly from the middle of the Ulna, and from the Interosseous Ligament, and its tendon passes through a groove at the lower end of the Radius.—It is *inserted* into the last bone of the Thumb.—Its *use* is to extend the Wrist and the last joint of the Thumb.

48 Vide No. 38 for the Flexor Longus Pollicis.

49 The Indicator *arises* posteriorly from the middle of the Ulna.—It is *inserted* into the posterior part of the Fore finger.—Its *use* is to extend the Fore finger.

50 The Pronator Quadratus is the only Muscle which

51 *Arises* from the lower and inner part of the Ulna.—It is *inserted* into the lower and anterior part of the Radius.—Its *use* is to pronate the Hand.

52 The Palmaris Brevis, is the only Muscle which

53 *Arises* from the Aponeurosis Palmaris, and Ligamentum Annulare.—It is *inserted* into the Os Pisiforme, and into the Integuments covering the Abductor Minimi Digiti.—Its *use* is to aid in contracting the Palm.

54 *Three Muscles* arise from the Wrist, and are inserted into the Thumb, viz. the *Abductor Pollicis*, *Flexor Ossis Metacarpi Pollicis*, and *Flexor Brevis Pollicis.*

55 The Abductor Pollicis *arises* from the Annular Ligament and Os Trapezium.—It is *inserted* into the outside of the root of the first bone.—Its *use* is to draw the Thumb toward the Finger.

56 The Flexor Ossis Metacarpi Pollicis *arises* from the Trapezium and Annular Ligament lying under the Abductor.—It is *inserted* anteriorly into the lower end of the Metacarpal Bone of the Thumb.—Its *use* is to draw the Thumb toward the Finger.

57. The Flexor Brevis Pollicis *arises* from the Trapezoides, Magnum and Unciforme of the Carpus, being divided by the Flexor Longus.—It is *inserted* into the Ossa Sessamoidea, and first bone of the Thumb.—Its *use* is to bend the first joint of the Thumb.

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58 The ABDUCTOR INDICIS,

59 *Arises* from the Trapezium, and from the inside of the Metacarpal Bone of the Thumb.—It is *inserted* into the outward and back part of the first bone of the Index.—Its *use* is to approximate the Thumb and Fore finger.

60 *Three Muscles* arise from the Wrist, and are inserted into the Little Finger, viz. the *Abductor Minimi Digiti Manus*, *Adductor Metacarpi Minimi Digiti*, and *Flexor Parvus Minimi Digiti.*

61 The ABDUCTOR MINIMI DIGITI MANUS *arises* from the Os Pisiforme and Annular Ligament.—It is *inserted* into the outer side of the upper end of the first bone of the little Finger.—Its *use* is to draw this finger from the rest.

62 The ADDUCTOR METACARPI MINIMI DIGITI *arises* from the Process of the Unciforme, and from the Annular Ligament.—It is *inserted* into the inside and anterior part of the Metacarpal Bone of the Forefinger.—Its *use* is to draw the Metacarpal Bone of this finger toward the rest.

63 The FLEXOR PARVUS MINIMI DIGITI *arises* from the outside of the Os Unciforme and Annular Ligament.—It is *inserted* into the inner and anterior part of the upper end of the first bone of this finger.—Its *use* is to bend the first joint, and to assist the Adductor.

64 The ADDUCTOR POLLICIS,

65 *Arises* from all the length of the Metacarpal Bone of the middle Finger.—It is *inserted* into the inner part of the root of the first bone. Its *use* is to draw the Thumb toward the Finger.

66 *Seven Muscles* arise from the Metacarpus, and are inserted into the Fingers, viz. the *Prior Indicis*, *Posterior Indicis*, *Prior Medii*, *Posterior Medii*, *Prior Annularis*, *Posterior Annularis*, and *Interosseous Auricularis.*

67 The PRIOR INDIGIS *arises* from the upper anterior part of the Metacarpal Bone of the Fore finger.—It is *inserted* into all the posterior part of the Fore finger. Its *use* is to Abduct the Fore finger, to bend the first joint and to extend the rest.

Answ.

68 The **Posterior Indicis** *arises* from the root and inner part of the Metacarpal Bone of the Fore finger.—It is *inserted* into all the posterior part of the Fore finger. Its *use* is to Abduct the Fore finger, to bend the first joint and to extend the rest.

69 The **Prior Medii** *arises* from the roots of the Metacarpal Bones of the fore and middle Fingers.—It is *inserted* into all the posterior part of the little Finger. Its *use* is to draw the middle Finger toward the Thumb, to bend the first, and to extend its other joints.

70 The **Posterior Medii** *arises* from the roots of the Metacarpal Bones that sustain the middle and ring Fingers.—It is *inserted* into all the posterior part of the middle Finger. Its *use* is to draw the middle Finger outward, to bend its first, and to extend its other joints.

71 The **Prior Annularis** *arises* from the anterior part of the root of the Metacarpal Bone of the ring Finger. It is *inserted* into all the posterior part of the ring Finger. Its *use* is to Abduct the ring Finger, to bend its first, and to extend its other joints.

72 The **Posterior Annularis** *arises* from the roots of the Metacarpal Bones of the ring and little Fingers. It is *inserted* into all the posterior part of the ring Finger. Its *use* is to Abduct the ring Finger, to bend its first, and to extend its other joints.

73 The **Interosseus Auricularis** *arises* from the anterior part of the root of the Metacarpal Bone of the little Finger.—It is *inserted* into all the posterior part of the little Finger. Its *use* is to Abduct the little Finger, to bend its first, and to extend its other joints.

SECTION XXII.

MUSCLES OF THE LOWER EXTREMITY.

1 The **Psoas Magnus** is the only Muscle which

2 *Arises* from the side of the body and transverse process of the last Vertebra of the Back, and from the same parts of all the Lumbar Vertebræ.—It is

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inserted into all the Trochanter Minor of the Femur, and some way below it. Its *use* is to bend the Thigh, or the Lumbar Vertebræ upon the Pelvis.

3 *Thirteen Muscles* arise from the Pelvis, and are inserted into the Femur, viz. the *Gluteus Maximus*, *Gluteus Medius*, *Gluteus Minimus*, *Pyriformis*, *Obturator Internus*, *Gemini*, *Quadratus Femoris*, *Iliacus Internus*, *Pectinalis*, *Obturator Externus*, *Adductor Longus Femoris*, *Adductor Brevis Femoris*, and *Adductor Magnus Femoris*.

4 The GLUTEUS MAXIMUS *arises* from the posterior part of the Crista Ilii, from the side of the Sacrum, below its junction with the Ilium, from the posterior Sacro-Ischiatic Ligament, and from the Os Coccygis. It passes over the posterior part of the Trochanter Major, and is connected to the Fascia of the Thigh.—It is *inserted* into the upper and outer part of the Linea Aspera. Its *use* is to extend the Thigh.

5 The GLUTEUS MEDIUS *arises* from the anterior superior Spinous process of the Ilium, anteriorly from the outer edge of the spine of the Ilium, and posteriorly from the Dorsum of that bone.—It is *inserted* into the middle great depression of the Trochanter Major. Its *use* is to pull the Femur outward and backward, and when bended, to rotate it outward.

6 The GLUTEUS MINIMUS *arises* from a ridge extending from below the superior anterior Spinous process of the Ilium to its great Notch.—It is *inserted* into the anterior great depression of the Trochanter Major. Its *use* is to pull the Femur outward and backward, and to rotate it outward.

7 The PYRIFORMIS *arises* internally from the second, third, and fourth false Vertebræ, passing out of the Pelvis, it receives some fibres from the posterior inferior Spine of the Ilium.—It is *inserted* into the anterior small depression on the top of the Trochanter Major. Its *use* is to aid in moving the thigh upward, and rolling it outward.

8 The OBTURATOR INTERNUS *arises* from almost all the internal circumference of the Obturator Fora-

Answ.

men; it passes out of the Pelvis between the Tuber Ischii, and the posterior Sacro-Ischiatic Ligament, passing also over the Capsular Ligament of the hip joint it is sheathed by the Gemini.—It is *inserted* into the posterior small depression on the top of the Trochanter Major. Its *use* is to roll the Femur obliquely outward.

9 The Gemini *arise*, the superior from the Spine, and the inferior from the Tuberosity of the Ischium, and in their course they form a sheath for the Obturator Internus.—They are *inserted* into the posterior part of the top of the Trochanter Major on each side the Obturator Internus. Their *use* is to roll the Thigh outward, and to retain the Tendon of the Obturator.

10 The Quadratus Femoris *arises* from the outer edge of the Tuber Ischii.—It is *inserted* posteriorly into a ridge between the great and small Trochanter. Its *use* is to roll the Thigh outward.

11 The Iliacus Internus *arises* from all the Venter of the Ilium, and also from the transverse process of the last Lumbar Vertebra.—It is *inserted* into the Trochanter Minor. Its *use* is to bend the Thigh.

12 The Pectinalis *arises* from the upper and anterior part of the Os Pubis.—It is *inserted* into the anterior upper part of the Linea Aspera. Its *use* is to bring the Thigh upward and inward, and to rotate it in some degree outward.

13 The Obturator Externus *arises* from the inferior anterior part of the Pubis, from the fore part of the Crus of the Ischium, and from the external Margin of the Obturator Foramen.—It is *inserted* into the cavity behind the Trochanter Major, adhering to the Capsular Ligament. Its *use* is to roll the Femur outward, and to prevent the Capsular Ligament from being pinched.

14 The Adductor Longus Femoris *arises* from the superior anterior part of the Os Pubis, and from its Symphysis, internally to the Pectinalis.—It is *inserted* near the middle of the Linea Aspera.—Its *use* is to pull the Femur inward and upward, and, in some degree, to rotate it outward.

Answ.

15 The Adductor Brevis Femoris *arises* from the Pubis near its Symphysis, below and behind the Adductor Longus Femoris.—It is *inserted* into the upper part of the Linea Aspera, above the insertion of the Adductor Longus Femoris.—Its *use* is similar to that of the Adductor Longus Femoris.

16 The Adductor Magnus Femoris *arises* near the Symphysis, more inferiorly than the Adductor Brevis Femoris, and from the Tuber Ischii.—It is *inserted* into almost all the length of the Linea Aspera, into the ridge leading from that to the Internal Condyle, and into the Condyle itself. Its *use* is to pull the Femur inward and upward, and, in some degree, to rotate it outward.

17 The Tensor Vaginæ Femoris,

18 *Arises* externally from the anterior superior Spinous process of the Ilium.—It is inserted a little below the Trochanter Major into the inside of the Fascia of the Thigh. Its *use* is to stretch the Fascia, to Abduct the Thigh, and rotate it outward.

19 *Six Muscles* arise from the Pelvis, and are inserted into the Leg, viz. the *Rectus Cruris*, *Sartorius*, *Gracilis*, *Semitendinosus*, *Semimembranosus*, and *Long Head of Biceps.*

20 The Rectus Cruris *arises* from the inferior anterior Spine of the Ilium, and from the Dorsum of the same bone.—It is *inserted* into the Patella, and subsequently into the anterior Tuberosity of the Tibia. Its *use* is to bend the Thigh and to extend the Leg.

21 The Sartorius *arises* from the anterior superior Spine of the Ilium, and passes inwardly.—It is *inserted* into the inner anterior side of the upper end of the Tibia. Its *use* is to elevate the Thigh and to turn it outward, and to bend the Leg inwardly.

22 The Gracilis *arises* from the Symphysis Pubis.—It is *inserted* into the Tibia behind the Sartorius. Its *use* is to Adduct the Femur, and to bend the Knee.

23 The Semitendinosus *arises* conjoined with the long head of the Biceps, from the upper part of the Tuber Ischii.—It is inserted into the Tibia behind the Sartorius. Its use is to extend the Thigh and bend the Leg.

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24 The Semimembranosus *arises* from the upper part of the Tuber Ischii.—It is *inserted* into the inner and back part of the head of the Tibia. Its *use* is to extend the Thigh and to bend the Leg.

25 The Long Head of the Biceps *arises* conjointly with the Semitendinosus, from the upper part of the Tuber Ischii.—It is *inserted* into the top of the head of the Fibula. *Its use* is to extend the Thigh and bend the Leg.

26 *Five Muscles* arise from the Femur, and are inserted into the Leg, viz. the *Cruralis*, *Vastus Externus*, *Vastus Internus*, *Short Head of the Biceps*, and *Popliteus*.

27 The Cruralis *arises* from between the two Trochanters of the Femur, and is connected to the Femur downward, and to both Vasti.—It is *inserted* into the upper part of the Patella, and by means of its Ligament into the Tuberosity of the Tibia. *Its use* is to extend the Leg.

28 The Vastus Externus *arises* from the root of the Trochanter Major, and whole length of the Linea Aspera.—It is *inserted* similarly to the Cruralis, but more externally. *Its use* is to extend the Leg.

29 The Vastus Internus *arises* from between the root of the Trochanter Minor and anterior part of the Femur, and from all the length of the Linea Aspera.—It is *inserted* like the Cruralis, but more internally. *Its use* is to extend the Leg.

30 The Short Head of the Biceps *arises* from the Linea Aspera, below the insertion of the Gleuteus Maximus.—It is *inserted* into the top of the head of the Fibula. *Its use* is to bend the Leg.

31 The Popliteus *arises* from the inferior and posterior part of the external Condyle of the Femur, adhering to the Capsular Ligament.—It is *inserted* into a ridge at the upper and internal part of the Tibia. *Its use* is to bend the Leg, and prevent the Capsular Ligament from being pinched.

32 *Two Muscles*, viz. the *Gastrocnemius*, and *Plantaris*, arise from the Femur, and are inserted into the Foot.

33 The Gastrocnemius *arises* by two heads, one from

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the superior and posterior part of the internal Condyle of the Femur, the other from the same part of the External. It is inserted into the Tendon of the Soleus. *Its use* is to bend the Knee and to aid the Soleus.

34 The PLANTARIS *arises* from the upper and back part of the root of the external Condyle of the Femur, adhering to the Capsular Ligament of the Knee Joint in its descent.—It is *inserted* into the inside of the posterior part of the Os Calcis, below the Tendo Achillis. *Its use* is to aid in bending the Knee, and in extending the foot, and to prevent the Capsular Ligament being pinched.

35 *Six Muscles* arise from the Leg, and are inserted into the Foot, viz. the *Soleus*, *Tibialis Posticus*, *Peroneus Longus*, *Peroneus Brevis*, *Tibialis Anticus*, and *Peroneus Tertius*, or *Nonus Vesalii.*

36 The SOLEUS arises from the posterior part of the head of the Fibula, from that bone someway downward, and also from the posterior and middle part of the upper end of the Tibia, and from the same bone more internally.—It is *inserted* by its Tendon (named *Tendo Achillis*) into the posterior part of the Os Calcis. *Its use* is to extend the foot.

37 The TIBIALIS POSTICUS *arises* from the anterior and upper part of the Tibia, and, (passing through the Interosseous Ligament,) from the back of the Fibula, from a great portion of the back of the Tibia superiorly, and from the Interosseous Ligament; its tendon passes in a groove behind the Malleolus Internus.—It is *inserted* into the upper and inner part of the Os Naviculare, thence into the Cuneiforme Internum and Medium. *Its use* is to extend the Foot and to turn the Toes inward.

38 The PERONEUS LONGUS *arises* anteriorly from the head and externally from the body of the Fibula, almost as far down as the Ankle, its tendon passing through a groove in the posterior part of the lower end of the Fibula, on the outside of the Os Calcis, and on the inferior part of the Os Cuboides.—It is *inserted* into the Os Cuneiforme Internum, and into the outside of the root of the Metatarsal Bone of

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the great Toe. *Its use* is to extend and to move the Foot outward.

39 The PERONEUS BREVIS *arises* from above the middle of the external part of the Fibula.—It is *inserted* externally into the root of the Metatarsal Bone of the little Toe. *Its use* is to assist the Peroneus Longus.

40 The TIBIALIS ANTICUS *arises* from the outside of the anterior Tuberosity of the Tibia, from the outside of the bone itself, and from the Interosseous Ligament, its tendon passing under the annular Ligament of the Tarsus.—It is *inserted* into the inner part of the Os Cuneiforme Internum, and root of the Metatarsal Bone of the great Toe. *Its use* is to bend the Foot, and turn the Toes inward.

41 The PERONEUS TERTIUS, or NONUS VESALII, *arises* from the middle of the Fibula, almost to its inferior extremity.—It is inserted into the root of the Metatarsal Bone of the little Toe. *Its use* is to assist in bending the Foot.

42 *Four Muscles* arise from the Leg, and are inserted into the Toes, viz. the *Extensor Longus Digitorum Pedis*, *Extensor Proprius Pollicis Pedis*, *Flexor Longus Digitorum Pedis Profundus Perforans*, and *Flexor Longus Pollicis Pedis*.

43 The EXTENSOR LONGUS DIGITORUM PEDIS *arises* from the anterior inner part of the head of the Fibula, from the anterior outer part of the head of the Tibia, from the Interosseous Ligament, and from the Fascia of the Leg, also from the anterior Spine of the Fibula.—It is *inserted* into all the Phalanges of the four lesser Toes. *Its use* is to bend the Ankle Joint, and to extend all the joints of the Toes into which it is inserted.

44 The EXTENSOR PROPRIUS POLLICIS PEDIS *arises* from the anterior part of the Fibula, some way below its head, to nearly its lower extremity.—It is *inserted* into the posterior part of both the bones of the great Toe. *Its use* is to bend the Ankle Joint, and to extend the great Toe.

45 The FLEXOR LONGUS DIGITORUM PEDIS PROFUNDUS PERFORANS *arises* from the oblique ridge on the

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upper back part of the Tibia, and from the inner and outer edges of this bone, inclosing the Tibialis Posticus by its fibres, and afterwards passing through a groove of the Os Calcis, it divides into four Tendons, which run through those of the Perforatus. It receives a slip of Tendon from the Flexor Pollicis Longus.—It is *inserted* into the extremity of the last joint of the four lesser Toes. *Its use* is to extend the Ankle Joint, to turn the Foot inward, and to bend the Toes.

46 The FLEXOR LONGUS POLLICIS PEDIS *arises* posteriorly from below the head of the Fibula, being continued almost to its inferior extremity.—It is *inserted* into the posterior part of both the bones of the great Toe. Its *use* is to extend the Ankle Joint, and to bend the great Toe.

47 *Three Muscles* arise from the Tarsus and Metatarsus, and each is inserted into the Toes generally, viz. the *Extensor Brevis Digitorum Pedis*, *Flexor Brevis Digitorum Pedis*, and *Flexor Digitorum Accessorius*, or *Massa Carnea Jacobi Sylvii.*

48 The EXTENSOR BREVIS DIGITORUM PEDIS *arises* from the anterior and upper part of the Calcaneum, lying under the tendons of the Extensor Longus.—It is *inserted* into the posterior part of all the Toes, except the little one. Its *use* is to extend the Toes.

49 The FLEXOR BREVIS DIGITORUM PEDIS *arises* between the Abductors of the little and great Toes, from protuberances upon the inferior posterior part of the Calcaneum.—It is *inserted* by four Tendons into the second Phalanx of the four lesser Toes: that of the little toe is sometimes wanting. Its *use* is to bend the first and second Joints of the four lesser Toes.

50 The FLEXOR DIGITORUM ACCESSORIUS, or MASSA CARNEA JACOBI SYLVII, *arises* from the external Tuberosity of the Calcaneum, and from a great part of its internal concavity.—It is *inserted*, by means of the tendons of the Flexor Longus, which it joins at its division. *Its use* is to assist the Flexor Longus.

51 The LUMBRICALES PEDIS,

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52 *Arise* by four commencements from the tendon of the Flexor Profundus, near the insertion of the Massa Carnea, and just before its division.—They are *inserted*, by four Tendons, into the internal posterior part of the four lesser Toes. Their *use* is to draw the Toes inward, and to bend their first joint and to extend the rest.

53 *Twelve Muscles* arise from the Tarsus and Metatarsus, and are inserted into the Toes, viz. the *Adductor Pollicis Pedis*, *Flexor Brevis Pollicis*, *Abductor Pollicis Pedis*, *Adductor Minimi Digiti Pedis*, *Flexor Brevis Minimi Digiti Pedis*, *Abductor Minimi Digiti Pedis*, *Adductor Indicis Pedis*, *Abductor Indicis Pedis*, *Adductor Medii Digiti Pedis*, *Abductor Medii Digiti Pedis*, *Adductor Tertii Digiti Pedis*, and *Abductor Tertii Digiti Pedis*.

54 The Adductor Pollicis Pedis *arises* from the inner protuberance of the Calcaneum, and from the same bone where it joins the Naviculare.—It is *inserted* into the Os Sessamoideum Internum, and the base of the first bone of the great Toe. *Its use* is to Adduct the great Toe.

55 The Flexor Brevis Pollicis *arises* from the inferior anterior part of the Calcaneum, where it joins the Cuboides, and from the Cuneiforme Externum; being internally connected with the Abductor and Adductor.—It is *inserted* into the Os Sessamoideum Externum, and base of the first Bone of the great Toe. *Its use* is to bend the first joint.

56 The Abductor Pollicis Pedis *arises* from the Calcaneum, Cuboides, Cuneiforme Externum, and the base of the Metatarsal Bone of the second Toe.—It is *inserted* into the Os Sessamoideum Externum, and the base of the Metatarsal Bone of the great Toe.—Its *use* is to Abduct the great Toe.

57 The Adductor Minimi Digiti Pedis *arises* from the inside of the root of the Metatarsal Bone of the little Toe.—It is *inserted* into the inside of the base of the first bone of the little Toe. *Its use* is to Adduct the little Toe.

58 The Flexor Brevis Minimi Digiti Pedis *arises* from the Cuboides near the groove of the Peroneus

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Longus, and from the outside of its own Metatarsal Bone. It is *inserted* into the top of the Metatarsal Bone, and base of the first bone of the little Toe. *Its use* is to bend the first joint of the little Toe.

59 The ABDUCTOR MINIMI DIGITI PEDIS *arises* from before the external protuberance of the Calcaneum, and from the root of the Metatarsal Bone of the little Toe.—It is *inserted* into the base of the first bone of the little Toe. *Its use* is to Abduct the little Toe.

60 The ADDUCTOR INDICIS PEDIS *arises* from the inside of the base of the Metatarsal Bone of the fore Toe, from the outside of the base of the Metatarsal Bone of the great Toe, and from the Cuneiforme Internum.—It is *inserted* into the inside of the base of the first bone of the fore Toe. *Its use* is to Adduct the fore Toe.

61 The ABDUCTOR INDICIS PEDIS *arises* from the base of the Metatarsal Bones of the fore and second Toes.—It is *inserted* into the outside of the base of the first bone of the fore Toe. *Its use* is to Abduct the fore Toe.

62 The ADDUCTOR MEDII DIGITI PEDIS *arises* from the inside of the base of the Metatarsal Bone of the middle Toe.—It is *inserted* into the inside of the base of the first bone of the middle Toe. *Its use* is to Adduct the middle Toe.

63 The ABDUCTOR MEDII DIGITI PEDIS *arises* from the bases of the Metatarsal Bones of the second and third Toes.—It is *inserted* into the outside of the base of the first bone of the second Toe. *Its use* is to Abduct the second Toe.

64 The ADDUCTOR TERTII DIGITI PEDIS *arises* from the inner and under part of the base of the Metatarsal Bone of the third Toe.—It is *inserted* into the inside of the base of the first bone of the third Toe. *Its use* is to Adduct the third Toe.

65 The ABDUCTOR TERTII DIGITI PEDIS *arises* from the roots of the Metatarsal Bones of the third and little Toes.—It is *inserted* into the outside of the base of the first bone of the third Toe. *Its use* is to Abduct the third Toe.

66 The TRANSVERSALIS PEDIS, from one Metartasal bone to another,

Answ.
67 *Arises* inferiorly from the anterior end of the Metatarsal Bone of the great Toe, and from the Os Sessamoideum Internum.—It is *inserted* inferiorly and externally, into the anterior end of the Metatarsal Bone of the little Toe, and the Ligament of the next one.—*Its use* is to contract the Foot from side to side.

SECTION XXIII.

BURSÆ MUCOSÆ.

1 The Bursæ Mucosæ are, as their name expresses, mucous bags of a delicate transparent texture, and whose internal surfaces are lubricated by a synovial fluid.

2 They answer the purpose of *friction Bags*, allowing the ready play of tendons over bone, &c.

3 They are chiefly *situated* in the Extremities, between tendons, which rub against each other; or where they play on the surface of bones, or joints, and between the integuments and certain prominent points of bone, viz. at the *knee*, *elbow*, and *knuckles*.

4 The *structure* of the membrane which forms them resembles that of the Sinovial membrane of joints.

5 They *adhere* with great firmness to the parts betwixt which they lie.

6 Their *internal surfaces* are in contact, and are only lubricated by the Synovial fluid which is formed in them.

SECTION XXIV.

FASCIÆ.

1 The Fasciæ, or Aponeuroses, are tendinous expansions, which brace and protect the muscles whilst in action, and support the form of parts.

2 The most extensive and important are the *Temporal Fascia*, the *Fascia of the Arm*, the *Fascia of the Fore Arm*, the *Palmar Fascia*, the *Femoral Fascia*, the *Fascia of the Leg*, and the *Plantar Fascia*.

3 The Temporal Fascia is attached to the Temporal ridges of the Os Frontis and Os Parietale, and the

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upper edge of the ZYGOMA, and posterior edge of the Os Malæ, and temporal process of the Os Frontis.

4 The FASCIA OF THE ARM is much thinner than that of the Fore-arm, from which it receives a considerable addition.

5 The FASCIA OF THE FORE-ARM is chiefly derived from the tendon of the Biceps.

6 The PALMAR FASCIA proceeds from the internal annular Ligament, and the tendon of the Palmaris Longus.

7 The FEMORAL FASCIA, or FASCIA LATA, is derived from the Tensor Vaginæ Femoris, and Glutæus Maximus.

8 The BRACHIAL FASCIÆ are strongest on the inner and anterior part of the Fore-arm, and the FASCIA LATA exceeds all the others in density at the outer part of the Thigh.

SPLANCHNOLOGY.

1 SPLANCHNOLOGY treats of the structure of the Viscera and Organs of the Senses.

2 The VISCERA are chiefly situated in the great Cavities of the body, viz.

3 The Cavity of the CRANIUM, the THORAX, and the ABDOMEN.

SECTION XXV.

THORACIC VISCERA.

1 The THORAX is *placed* between the Neck and the Abdomen.

2 The hard parts composing it are the *Dorsal Vertebræ*, the *Ribs* and *Sternum;* the soft parts are the *Pleura*, the *Intercostal Muscles*, and the *Diaphragm.*

3 It is of a conical figure.

4 The *Viscera of the Thorax* are, the *Pleura*, the *Thy-*

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mus Gland, the *Heart* and *great Vessels*, and the *Pericardium;* the *Lungs*, and the *Œsophagus.*

PLEURA.

5 The Pleura lines the cavity of the Thorax, and closely invests the Lungs.

6 It is a thin, transparent *Membrane*, its *outer Surface* is adherent to the Thorax and Lungs; its *inner Surface* is smooth and lubricated.

7 The *use* of this membrane is to afford a smooth and firm covering to the Lungs, and a lining to the Cavity of the Thorax, and to subdivide this into two Cavities.

8 This it effects by its *duplicature*, called, the Mediastinum.

9 The *Portions of the Pleura*, which line the Parieties of the Thorax on each side, *meet* behind the Sternum, *unite*, and forming a double membrane, *are reflected* directly backwards; they then *separate* to invest the Heart, Pericardium, and great vessels; they give off the covering to the Lungs; and *then*, behind the Heart, they again approach each other and pass to the bodies of the Vertebræ, so that in fact there are *two Pleuræ*, one for each side.

10 In this Duplicature there are *three Cavities*, viz. the *Anterior*, *Posterior*, and *middle Cavities* of the Mediastinum.

11 The *Anterior Cavity* contains the *Thymous Gland* in the Fœtus.

12 The *Heart* and *Pericardium* occupy the *middle Cavity*.

13 The *Posterior Cavity* contains the *Bronchia*, *Œsophagus*, *Descending Aorta*, and beginnings of the intercostal arteries, the *Descending Cava*, the *Vena Azygos*, the *Thoracic Duct*, the *Par Vagum*, and *Great Sympathetic Nerve.*

14 The *Mediastinum*, at its attachment to the posterior part of the Sternum, is placed a little to the left side.

15 That part of the Pleura, which covers the Lungs, has been called *Pleura Pulmonalis;* where it lines

Answ.

the Thorax, *Pleura Costalis;* and its outer surface, its *Cellular Portion.*

16 It is lubricated by a *serous fluid* which transudes from its pores.

17 The *Pleura* derives its Arteries chiefly from the Intercostals and Bronchial.

18 Its *Veins* pass to those which correspond with the Arteries in name and distribution.

19 Its *Nerves* are from the Intercostals.

THYMUS GLAND.

20 The **Thymus Gland** is *situated* in the superior part of the anterior Cavity of the Mediastinum.

21 It is of an *oblong* figure, having two processes above and two below.

22 It has the appearance of a *glandular Structure.*

23 *In the Fœtus* it is of considerable size; but in the adult there hardly remains a vestige of it.

24 Its *use* (which is unknown) appears to be confined to the fœtal state.

PERICARDIUM.

25 The **Pericardium** is a firm membranous bag which

26 Surrounds the Heart.

27 It is somewhat *conical*, corresponding to the figure of the Heart.

28 It consists of *three Laminæ*, of which *the middle one* is composed of dense tendinous filaments; the *inner one* is a continuation of the outer coat of the Heart; and the *outer one* is derived from the Pleura.

29 It adheres firmly to the tendinous part of the Diaphragm, and to the great vessels at the base of the Heart; the beginning of which it includes within its Cavity.

30 Its internal surface is lubricated by a *serous fluid* transuding from the exhalents.

31 The condensation and accumulation of this fluid, which takes place after death, affords a sensible quantity of it, it is called the **Liquor Pericardii.**

HEART.

Answ.

32 The Heart is a hollow muscular organ, which receives the blood from, and transmits it to, all the parts of the body.

33 Invested by the Pericardium, it is *situated* between the Lungs, and rests on the superior part of the Diaphragm.

34 It is somewhat of a *conical form*, flatted however on its inferior surface, and rounded at its upper part.

35 It is divided into a *Basis*, turned backwards and upwards; an *Apex*, pointing forward and to the left side; a *rounded Edge* to the right; a more *acute Edge* to the left; a *superior convex Surface;* and an *inferior flat Surface.*

36 It is internally *divided* into four cavities, viz. *two Auricles* as its base, and *two Ventricles* forming its body.

37 There is no *communication* betwixt the *two Auricles*, nor any betwixt the *two Ventricles;* but the *right Auricle* communicates with the *right Ventricle*, and there is a similar opening betwixt the *left Auricle* and the *left Ventricle;* the two sides of the Heart are therefore distinct.

38 The Auricles receive the blood from the great veinous trunks which are fixed to them, and transmit it to the Ventricles.

39 The Ventricles have each a large artery into which they propel the blood in a manner and for purposes to be hereafter described.

RIGHT AURICLE.

40 The *right Auricle* is situated toward the anterior part of the base of the Heart.

41 The Septum Auricularum divides it from the left.

42 The transverse *fleshy fibres* on the sides of the Auricle are called the Musculi Pectinati.

43 The *two Venæ Cavæ*, and the *Coronary Vein* open into this Auricle.

44 There is an irregular *Appendix* of the Auricle communicating with its Cavity.

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45 The *Superior Vena Cava* opens into its upper posterior part.

46 The *Inferior Vena Cava* opens into its lower posterior part.

47 Between the mouths of the Venæ Cavæ there is an angular projection, called *Tuberculum Loweri.*

48 The *Coronary Vein* enters toward the inner and inferior part.

49 Its opening is protected by a considerable *semilunar Valve.*

50 The *Valve of Eustachius* is a fold of the inner membrane, situated to the left of the opening of the inferior Cava.

RIGHT VENTRICLE.

51 The RIGHT VENTRICLE is situated at the anterior part of the right side of the Heart.

52 It is larger than the left, though its parieties are thinner.

53 The fleshy pillars, by the contraction of which the valves of the Ventricles are closed, are called *Carnea Columnæ.*

54 The Tendons of the Carnea Columnæ, by which they are connected to the edges of the valves, are called *Corda-Tendineæ.*

55 The TRICUSPID VALVE is placed at the opening between the right Auricle and Ventricle.

56 It is a *tendinous curtain*, fixed around the circular opening into the Ventricle; its opposite edge presents three points, which are connected to the sides of the Ventricle by tendinous cords.

57 When the Ventricle contracts, this Valve prevents the blood from returning into the Auricle.

58 At its upper and left side is situated the opening of the PULMONARY ARTERY.

59 At this part *three Semilunar Valves* are placed.

60 The loose *Edge* of each resembles two small crescents, uniting in a middle Papilla, called *Corpus Sesamoideum Aurantii.*

61 *These Valves* support the column of blood in the Artery, and prevent its returning into the Ventricle.

LEFT AURICLE.

Answ.

62 The Left Auricle is situated at the superior and posterior part of the left side of the Heart.

63 This cavity is smaller than the right, but its sides are thicker.

64 Its *general structure* resembles that of the right Auricle.

65 The *four Pulmonary Veins* open into this Auricle.

LEFT VENTRICLE.

66 The Left Ventricle is situated at the posterior and left part of the Heart.

67 Its *general structure* is similar to the right.

68 The Mitral Valve is placed at the opening to the Auricle.

69 The *Mitral Valve* resembles the Tricuspid in situation, use and structure, and differs from it only in being divided into two portions only, which has occasioned it to be compared to a Bishop's Mitre.

70 At the upper and fore part is the *Opening of the Aorta.*

71 This is guarded by *three Semilunar Valves.*

72 Their *structure* and *use* exactly correspond with those of the Pulmonary Artery.

ARTERIES, VEINS, AND NERVES OF THE HEART.

73 The Two Coronary Arteries, which nourish the substance of the Heart, are derived from the commencement of the Aorta, immediately behind its Semilunar Valves;

74 That which supplies the right side runs between the right Auricle and Ventricle; the left passes between the Pulmonary Artery and left Ventricle, and divides into branches.

75 The Corononary Vein opens into the right Auricle.

76 Its Nerves are derived from the *Cardiac Plexus.*

TRACHEA.

Answ.

77 The TRACHEA is situated anteriorly in the lower part of the Neck and in the Thorax, behind the Thymus Gland, between the two Pleuræ in the space left superiorly between the duplicature of the Mediastinum.

78 It is of a *tubular form*, flatted posteriorly,

79 It consists anteriorly of Segments of *cartilaginous Circles*, forming an incomplete canal, which is membranous posteriorly.

80 At its termination it divides in into *two Tubes* of similar structure, called the BRONCHIÆ.

81 This *division* takes place behind the curvature of the Aorta.

82 A very irritable mucous membrane lines the Trachea.

83 It has *four coats*, including the internal lining.

84 The *External*, or *Cellular Coat*, is a continuation of the cellular covering of the Lungs.

85 The *Second Coat* is the internal Perichondrium to its Cartilages.

86 The *Third Coat*, which has been thought muscular, completes the circumference of the cartilaginous circles.

LUNGS.

87 The LUNGS are situated in the cavity of the Thorax, which they chiefly fill.

88 They are adapted to the cavity which contains them; being convex next the Ribs, concave next the Diaphragm, and irregularly formed next the Mediastinum and Heart.

89 The LUNGS consist of two great lateral parts; or a *right* and a *left Lung*, having between them the Heart and Mediastinum. The *right Lung* is subdivided into *three lobes*, and the *left* into *two*.

90 At the lower edge of the *left Lung* there is a notch occasioned by the presence of the Apex of the Heart.

91 They are almost entirely of a spungy texture, consisting of an immense number of small membranous cells.

Answ.

92 The external covering of the Lungs is a continuation of *the Plura.*

93 Within the substance of the Lungs the BRONCHIÆ ramify.

94 They are *conical tubes*, they divide and subdivide.

95 Their minute branches become *membranous*, and

96 They terminate in the *Vesiculæ Bronchialis*, or *air Cells* which are collected.

97 Into *Bundles*, called

98 *Lobuli.*

99 In *structure* the Bronchia resemble the Trachea.

100 A *branch* of the BRONCHIA generally lies between one of the Pulmonary Artery and Pulmonary Vein.

101 The *Interlobular Substance*, is the cellular or spungy substance which surrounds the Lobuli, and connects them together.

102 If this be inflated, the Lobuli are compressed and flattened.

ARTERIES, VEINS, AND NERVES OF THE LUNGS.

103 The *Blood Vessels* of the lungs are of two kinds, one common, called the *Pulmonary Artery and Veins;* the other proper, called the *Bronchial Arteries and Veins.*

104 The PULMONARY ARTERY divides into two branches, one for each Lung; they take the same course as the Bronchiæ; and, ramifying on the surfaces of the Bronchial Cells, they form a beautiful Plexus, called the *Rete Mirabile* of Malpighi.

105 The BRONCHIAL ARTERIES are the nutrient vessels of the Lungs.

106 Its blood is returned by the *Bronchial Veins*, which pass

107 Irregularly either to the *Vena Azygos*, or *Guttural Vein.*

108 The *Pulmonary Veins* receive the blood from the Pulmonary Arteries.

109 There are *four Pulmonary Veins*, two for each Lung;

110 They pass to the *left Auricle* of the Heart.

111 The *Nerves* of the Lungs are derived from the *Eighth Pair* and *great Sympathetic.*

BRONCHIAL GLANDS.

Answ.

112 The **Bronchial Glands** are chiefly situated about the termination of the Trachea and beginning of the Bronchiæ.

113 They are of various sizes, and usually of a *motley-blue* appearance.

114 They are *lymphatic Glands* connected with the absorbent Vessels of the Lungs.

SECTION XXVI.

CIRCULATION OF THE BLOOD.

1 The *Circulatian of the Blood* is effected by the alternate contraction of the Auricles and Ventricles, the *Diastole* and *Systole* of the Heart.

2 The *Diastole* is the dilatation of the Ventricles, occasioned by the contraction of the Auricles on their contents.

3 The *Systole* is the contraction of the Ventricles, by which the blood they contain is propelled through all the Arteries.

4 The Blood being returned by the Superior Vena Cava, from the upper part of the body, and by the Inferior Vena Cava, from the lower part, is emptied into the *right Auricle;* this contracts and discharges its contents into the *right Ventricle;* when completely filled; the right Ventricle contracts, by that contraction its tricuspid valve is shut, and its contents propelled through the ramifications of the Pulmonary Artery in the Lungs. The blood is returned by the four Pulmonary Veins into the *left Auricle*, which being distended, now contracts and throws its blood into the *left Ventricle;* the left Ventricle then also contracts, its mitral valve shuts, and all its blood is propelled through the Aorta into the Capillary Vessels of the System; whence it is again returned by the Veins into the two Venæ Cavæ and the *right Auricle*, to undergo precisely the same process. The mouths of the Aorta and Pulmonary

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Artery being each protected by three semilunar valves, the blood is prevented passing back from them into the Ventricles.

5 The Venous Blood, which is brought to the right side of the Heart, is of a dark purple hue; during its passage through the Lungs it attracts Oxygen from the air in the bronchial cells, and gives out a quantity of Carbonic acid gas; when returned to the left Auricle, it is found of a bright florid red.

SECTION XXVII.

RESPIRATION.

1 RESPIRATION consists in inhaling and exhaling the atmospherical air to and from the Lungs, or in *Inspiration* and *Expiration.*

2 INSPIRATION is thus performed:—The diaphragm contracting descends, and the ribs are raised; thus the cavity of the thorax is suddenly enlarged, which occasions air to rush in at the Trachea, and fills the cells of the Lungs.

3 EXPIRATION is effected by the relaxation, and consequent ascent of the diaphragm, and descent of the ribs; the capacity of the thorax being thus diminished, the air is expelled from the Lungs.

SECTION XXVIII.

ABDOMINAL VISCERA.

1 The ABDOMEN is situated between the Thorax and Pelvis.

2 The *Boundaries* of this Cavity are *above* the Diaphragm and the margin of the Chest; *behind* the five Lumbar Vertebræ, *below* the Pelvis; *anteriorly* and *laterally* the abdominal muscles.

3 It is divided into *three Regions; a Superior*, or *Epigastric Region; a Middle*, or *Umbilical Region;* and *an Inferior*, or *Hypogastric Region.*

Answ.

4 The EPIGASTRIC REGION is all that part which is situated above a line passing from the last rib on one side, across the Abdomen, to the last rib on the other side.

5 This *Region* is subdivided into three *other Regions*, viz. the *Scrobiculus Cordis*, or *Epigastricum*, in the middle, and the *two Hypochondria* on each side, under the edge of the false ribs.

6 The UMBILICAL REGION extends equally above and below the navel between the other two.

7 It is *divided* into its middle, or *Umbilicus*, two lateral regions, called *Ilia*, or *Flanks*, and posteriorly the *Regio Lumborum.*

8 The HYPOGASTRIC REGION is all that part below a line extending from the superior and anterior Spinous process of the Ossa Ilii.

9 Its middle is called the *Regio Pubis;* its sides the *Inguinal Regions*, or *Groins.*

10 The whole of this cavity is lined by a thin membrane, called *the Peritoneum.*

11 It contains, besides the *Peritoneum*, the ORGANS OF DIGESTION and CHYLIFICATION, viz. the *Stomach*, *Intestines*, *Liver*, *Spleen*, and *Pancreas.*—The URINARY ORGANS, viz. the *Kidneys*, *Ureters*, and *Bladder:* and lastly, part of the ORGANS OF GENERATION.

PERITONEUM.

12 The PERITONEUM adheres to the inner surface of the Abdominal Cavity; it is reflected over, invests, and supports all its Viscera.

13 It is a thin *membrane*, resembling the Pleura in structure.

14 Its *outer surface* is cellular, and is adherent to the surfaces of the Viscera with which it is in contact.

15 Its *inner surface* is very smooth and polished.

16 It is lubricated by a serous fluid discharged from exhalent vessels.

17 Its *Duplicatures* are extensive and numerous; after having completely invested an organ, the Peritoneum passes, double, to the Parietes of the Abdomen

Answ.

to be here expanded; these duplicatures confine the Organs in their places and support them; they are sometimes called *Ligaments;* the extensive one, which supports the intestines, is called, *the Mesentery;* and a very large one, hanging loose before the intestines, is called, *the Omentum*, &c.

18 The *Processes* of the PERITONEUM are elongations of it which accompany parts in their exit from the cavity of the Abdomen.

19 *Four Ligamentary Chords* are seen upon the outside of the Peritoneum anteriorly; they are the remains of parts peculiar to the Fœtus, viz. the *two Umbilical Arteries*, the *Umbilical Vein*, and the *Urachus*, to be described hereafter.

STOMACH.

20 The STOMACH is a membranous bag, into which the food is received, and where it is digested.

21 It is situated obliquely in the *left Hypochondrium*, and in the *Epigastrium.*

22 It is *oblong* and *incurvated; large* at one end, and *small* at the other.

23 Its *greater Extremity* is situated toward the left side;

24 The *lesser* toward the right side.

25 It forms a *small curvature superiorly*, which is turned rather *backward* when the stomach is full.

26 Its *greater Curvature* is placed inferiorly when empty; rather *anteriorly* when full.

27 It has *two openings;*

28 One is called the CARDIA, the other the PYLORUS.

29 The CARDIA is situated at the superior part, at a little distance from its greater Extremity.

30 The PYLORUS is situated at the termination of its lesser Extremity, and at the beginning of the Intestines.

31 The PYLORUS is situated lower, and turned more forward than the *Cardia.*

32 It has four Coats, viz.

33 The *Peritoneal*, the *Muscular*, the *Nervous*, and the *Villous* Coats.

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34 The *Peritoneal Coat* is the most external, it is smooth and lubricated.

35 The *Muscular Coat* is immediately within the Peritoneal.

36 It consists of two Planes of fibres; an external and an internal Plane.

37 The external Plane is longitudinal.

38 The internal Plane of fibres run circularly transverse.

39 The *Nervous Coat* is immediately within the Muscular Coat.

40 It is *cellular*, or *filamentary*, containing numerous small glands.

41 The *Villous Coat* is the most internal.

42 It somewhat resembles the pile of velvet, and is very vascular.

43 The two internal Coats of the Stomach being more extensive than the external, are thrown into folds, called *Rugæ*.

44 They are chiefly placed in a transverse direction.

45 The Stomach derives *its nerves* from the Eighth Pair and great Sympathetic.

46 The *Arteries* of the Stomach come from the Cæliaca.

47 *Its Veins* go to the Vena Portæ.

INTESTINES.

48 The Intestines form a long membranous tube, beginning at the Pylorus and ending at the Anus.

49 They are *divided* into the *large* and *small Intestines;* THE SMALL being *subdivided* into, the *Duodenum*, *Jejunum* and *Ilium;* and THE LARGE into *Cæcum*, *Colon* and *Rectum*.

DUODENUM.

50 The Duodenum is situated immediately below the Pylorus.

51 It is about *twelve fingers' breadth* in length, as its name imports.

52 It first bends a little backward and downward; then toward the right Kidney; and thence it passes before the Renal Artery and Vein, gradually ascend-

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ing to the left, before the Aorta and last Dorsal Vertebra; it then continues its course a little forward, making a small turn.

53 It is retained in its situation by the folds of the Peritoneum, and especially by a transverse duplicature, which gives origin to the Meso-colon.

54 The *Duodenum*, and all the small Intestines, have *four Coats* resembling those of the Stomach.

55 The *Peritoneal Coat* of the Duodenum does not invest the whole circumference of the intestine.

56 The *Muscular Coat* of the Duodenum is thicker than in the Jejunum and Ilium.

57 The Nervous and Villous Coats of the small Intestines, are much more extensive than the other two, and are thrown into folds, called *Valvulæ Conniventes.*

58 They resemble portions of circular plains, having one edge fixed to the Intestine, and the other loose.

59 In the Duodenum they are small, but grow much larger and more numerous in the Jejunum, and again decrease in the Ilium.

60 The *Villi in the Duodenum* are much less conspicuous than in the Jejunum.

61 On the short side of its first incurvation there is an opening which is the common Aperture of the *Excretory Duct* of the *Liver*, and of the *Pancreas.*

JEJUNUM AND ILIUM

62 There is no mark of distinction between the *termination* of the Jejunum and the beginning of the Ilium, this division is therefore arbitrary. It is usual to consider the superior *two fifths* as the Jejunum, and the remainder as the Ilium.

63 The *Jejunum*, beginning at the Duodenum, bends from left to right, and obliquely forward, making several convolutions; it lies chiefly in the upper part of the Umbilical Region.

64 The *Valvulæ Conniventes* and *Villi* of the Jejunum, are more prominent, loose and floating, than in the *Duodenum*, and they gradually diminish in the Ilium.

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65 Numerous *mucous Glands* are found in the JEJUNUM and ILIUM, in irregular clusters.

66 They are most numerous towards the end of the Ilium.

CŒCUM.

67 The CŒCUM, or Blind Gut, is a short, roomy pouch, into which the Ilium opens.

68 It is situated under the right Kidney, upon the Iliacus Internus, its bottom being turned downward.

69 A worm-like body is fixed to it, called *Appendix Cæci Vermiformis;*

70 It opens into the *Cæcum*, on the inner side of its bottom; its other Extremity is impervious;

71 Its diameter is about a quarter of an inch, and it is about three inches long.

72 In structure it nearly resembles the Intestines.

73 It has been reckoned by some to secret the odorous matter of the Excrement, but its *use* is not understood.

COLON.

74 The COLON, which forms the greater part of the large intestines, is situated around the small ones, beginning at the Cœcum, and ending at the Rectum.

75 It ascends in the Right Iliac Region; it then forms the *great Arch* above the Umbilical Region, crossing from the right Kidney to the lower part of the left Hypochondrium; this arch is situated immediately below the Liver, Gall bladder and Stomach; thence the Colon turns back under the Spleen, runs before the left Kidney, turns toward the Vertebræ, and terminates by a double incurvation.

76 This convoluted termination is called, the *Sigmoid Flexure.*

77 At the termination of the Ilium a pair of Valves are situated, called, *Valvulæ Coli*, or *Valvulæ Cæci*, or *Valvulæ Ilii.*

78 The *opening* between these Valves resembles a Fissure, its middle being most open.

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79 The Colon, as well as the Cœcum and Rectum, has the same number and kind of Coats as the small Intestines.

80 The longitudinal fibres of the *muscular Coat*, are collected into three distinct bundles, called the *longitudinal Bands*, beginning at the Cœcum; besides these there are occasionally *transverse Bands.*

81 Between these bands the Intestine bulges out, forming what are called the *Cells of the Colon.*

82 There are many fatty Processes hanging from the outside of the *Colon* and *Cæcum*, called, *Appendices Coli Adiposæ*, or *Appendices Epiploicæ.*

RECTUM.

83 The Rectum, or Straight Gut, extends from the last Lumbar Vertebra to the Anus.

84 It runs in a direct course in the hollow of the Os Sacrum and Os Coccygis.

85 Its external termination is called, *the Anus.*

86 Its *Membranous Coat* often contains a great quantity of fat.

87 Its *Muscular Coat* is very thick; its longitudinal fibres are very strong.

88 Its *Nervous* and *Villous Coats* are larger than in the other Intestines, and form numerous *Rugæ*,

89 Toward the Anus, the *Rugæ* become longitudinal, and towards the inner margin of the Anus they form little bags, the openings of which are turned upward.

90 The Rectum has numerous mucous glands.

MESENTERY.

91 The Mesentery is formed by two layers of the Peritoneum, which separate at the loose or folded edge, to surround the Intestines.

92 That part which supports the small Intestines retains the name of *Mesentery*, that which fixes the large Intestines is called *Meso-colon.*

Answ.

93 The **Mesentery** begins at the last incurvation of the Duodenum;

94 It passes obliquely from left to right along the Vertebræ of the Loins.

95 It is narrow at its upper and lower parts, but chiefly at the upper, while the middle portion is very broad, and its intestinal edge much plaited.

96 Its Laminæ are connected together by cellular substance.

97 Numerous Lymphatics, Arteries, Veins, Nerves, and Glands, are contained between these Laminæ.

98 The **Meso-colon** is a continuation of the Mesentery to support the large Intestines;

99 It begins at the extremity of the Ilium.

100 The *Ligamentum Coli Dextrum* is situated at the commencement of the Meso-colon, under the right Kidney;

101 It is formed by a small transverse fold of the Mesentery.

102 From this part the *Meso-colon* ascends toward the right Kidney, where it almost disappears by the adhesion of the Colon to that Kidney, and to the first turn of the Duodenum; appearing again, it increases in breadth, and passes transversely under the Liver, Stomach, and Spleen, including the great arch of the Colon; it then turns downward toward the left Kidney.

103 Below the left Kidney it is again short, forming what is called, the *Ligamentum Coli Sinistrum.*

104 It widens, but less than in the upper part, and ascends on the left Psoas, and continues the Sigmoid Flexure of the Colon.

105 Between the Rectum and Os Sacrum, at the upper part it fixes this gut, and is called **Meso-Rectum.**

LIVER.

106 The **Liver** is the largest Viscus in the Abdomen; it is a solid mass of a dark red colour, inclined to a brownish yellow, whose office it is to secrete the Bile.

107 It is *situated* immediately under the Diaphragm:

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partly in the right Hypochondrium, which it nearly fills; and partly in the Epigastrium, between the Spine and Ensiform Cartilage, terminating generally in the left Hypochondrium.

108 Its *Figure* is irregular, being convex superiorly, unequally concave inferiorly; very thick toward the back and right sides; it becomes gradually thin towards the left side, and forms an acute edge anteriorly.

109 It is *divided* into three Lobes, viz. the great or right Lobe, the small or left Lobe, and the Lobulus Spigelii.

110 The *right Lobe* is divided from the left superiorly by a membranous Ligament, and inferiorly by a considerable Fissure.

111 The *Lobulus Spigelii* is situated on the inferior side of the Liver toward its back part, near the great Fissure.

112 *Seven Depressions*, or *Fissures*, are noticed on the under side of the Liver, viz.

113 First, *the great Fissure;* secondly, *one for the Sinus of the Vena Portæ;* thirdly, *one for the Vena Cavæ;* fourthly, a *Furrow* between the left Lobe and Lobulus Spigelii, for a Venal Canal in the Fœtus; fifthly, *a Depression for the Gall-bladder;* sixthly, *a superficial Cavity*, caused by the Stomach; and seventhly, *the great Sinus*, for the Spine and Œsophagus, at the posterior part of the left Lobe.

114 The *Great Fissure* runs from behind forward, on the inferior side of the Liver, between its two Lobes.

115 The *Sinus of the Vena Portæ* is placed transversely between the eminences on the inferior Surface of the great Lobe.

116 The *Sinus of the Vena Cava* is situated posteriorly at the Extremity of the great Fissure, between the great Lobe and Lobulus Spigelii.

117 The *Depression for the Gall-Bladder* is situated on the forepart of the inferior Surface of the great Lobe.

118 The Liver is kept in its place by *five Ligaments*, viz.

119 The *broad Ligament*, the *round Ligament*, the *right*

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and *left lateral Ligaments*, and the *Coronary Ligament.*

120 The *broad*, and the *right* and *left Ligaments* are continuations, or duplicatures, of the Peritoneum; the *round Ligament* was the Umbilical Vein of the Fœtus, and the *Coronary Ligament* is merely a broad adhesion.

121 The *broad Ligament* or *Ligamentum Latum*, divides the right Lobe from the left, and connects the Liver to the Diaphragm, and to the upper and inner part of the Sheath of the Rectus Abdominis obliquely, so as to be nearer the Linea Alba, below than above.

122 The *round Ligament*, or *Ligamentum Rotundum*, the remains of the Umbilical Vein of the Fœtus, is placed in the anterior edge of the broad Ligament, it is fixed to the Umbilicus, and enters the great Fissure.

123 The *lateral Ligaments* connect it to the Cartilages of the false Ribs.

124 The *Coronary Ligament* connects the Liver to the right Ala of the Tendinous portion of the Diaphragm.

125 The Liver is composed of several kinds of vessels, which by their intertexture form numerous friable Corpuscles.

126 These vessels are enveloped in a sheath of Cellular Membrane, called, the Capsule of the Vena Portæ, or Glisson's Capsule.

127 The *Vessels* of the Liver are the *Hepatic Artery*, the *Vena Portæ*, and the *Hepatic Veins;* to which may be added, the *Excretory Ducts*, and *Absorbents.*

128 The *Hepatic Artery* and *Vena Portæ*, both carry blood to the Liver.

129 The *Hepatic Artery* is the Nutrient Artery of the Liver.

130 The *Vena Portæ* acts both as a Vein and an Artery; as a Vein it receives the blood from most of the Abdominal Viscera; as an Artery it ramifies through the Liver, and there secretes the Bile.

131 It gives off *five* principal branches.

Answ.

132 The terminations of its branches are in *Villous Folliculi*, or *Acini*, as they have been called.

133 In these *Folliculi*, or *Acini*, the Bile is secreted.

134 From them the excretory ducts commence, and are called *Pori Biliarii.*

135 These ultimately terminate in one large duct, called the *Ductus Hypaticus*, which

136 After joining the duct from the Gall-bladder, called, the *Cystic Duct*, terminates in the Duodenum.

137 The *Hepatic Veins* return the blood to the inferior *Cava.*

138 The Liver receives its *Nerves* from the Great Sympathetic and Eighth Pair.

139 The Vessels, Ducts and Nerves, which enter at the Portæ, are previously collected together and surrounded by a peritoneal Covering, which is the true *Glisson's Capsule.*

GALL-BLADDER.

140 The Gall-bladder is a small bag which contains the Bile.

141 It is *situated* in the anterior part of the inferior Surface of the great Lobe of the Liver.

142 It is *Pyriform;* but in Infants often Cylindrical.

143 It is divided into a *Fundus*, *Body* and *Neck.*

144 It lies in a plain, slightly inclined from behind forward in the erect posture; its *Fundus* being turned forward.

145 It consists of *four Coats:*

146 The *Internal*, or *Villous Coat*, is thrown into numerous minute folds, arranged in a beautiful reticular form, filled with small *Lacunæ*, or ducts of Follicles, especially near the Neck; at which place the folds become longitudinal, and form a kind of small Pylorus.

147 The *Gall-bladder* is connected by vessels and cellular membrane to the Liver; but in the Human Body no branches from the Pori Biliarii have been discovered opening into it.

148 *Its Neck* is formed by the contraction and incurvation of the small Extremity;

Answ.

149 On its *internal Surface* there are several Reticular Rugæ.

150 from the Neck proceeds a duct called the *Ductus Cysticus*, which, after running near the Hepatic Duct, joins it.

151 From their union proceeds the *Ductus Communis Choledochus;*

152 This Duct terminates, in common with the Pancreatic Duct, on the inside of the Duodenum.

153 The Bile, secreted by the Extremities of the Vena Portæ in the Acini, passes through the Pori Biliarii and branches of the Hepatic Duct; by this Duct it is conveyed to the Ductus Communis Choledochus: from whence, in part, it passes, by the Cystic Duct to the Gall-bladder;—when needed in the Intestine, it returns by the Cystic Duct, and mixes, in the Ductus Communis Choledochus, with fresh Bile from the Hepatic Duct; and lastly passes into the Duodenum.

PANCREAS.

154 The Pancreas is a long, flat, glandular Body, of a grayish white colour.

155 It is placed at the back part of the Epigastric Region, transversely under the Stomach, and before the Spine, the Crura of the Diaphragm, the Aorta, and Vena Cava.

156 It is divided into a *superior*, and an *inferior Edge*, an *anterior* and a *posterior Side;* a *large* and a *small Extremity.*

157 Its *large* or *right Extremity* is connected to the second Incurvation of the Duodenum; and its *lesser Extremity* to the Omentum, near the Spleen.

158 At the lower part of the great Extremity of the Pancreas, where it is connected with the Duodenum, this gland sends a process downward, called the *lesser Pancreas.*

159 Its *Duct* passes into the extremity of the Duct of the greater Pancreas, although sometimes it has a separate opening into the Duodenum.

Answ.

160 The **Pancreatic Duct** is nearly transparent, it arises from numerous small branches.

161 It is placed horizontally within the substance of the gland, toward the middle of its inferior Edge.

162 It *terminates*, along with the Ductus Choledochus, in the Duodenum.

163 The **Pancreas** consists of a great number of small glandular Particles connected loosely together; it resembles the Salivary Glands.

164 The *Arteries* of the Pancreas are derived from the Pyloric and Duodenal, but chiefly from the Splenic Artery.

165 Its *Veins* pass to the Splenic Vein.

166 Its *Nerves* are derived from the Great Sympathetic and Eighth Pair.

SPLEEN.

167 The **Spleen** is a soft, spunge-like, fleshy, purple mass.

168 It is *placed* in the left Hypochondrium, at the large Extremity of the Stomach.

169 It is somewhat of an *oval form.*

170 It has an *External Surface*, uniformly convex; an *Internal Surface*, divided by a groove into two Concavities; (the anterior opposed to the Stomach, the posterior to the Colon and left Kidney;) *two Edges*, often notched, and *two Extremities.*

171 It appears of cellular structure; but is probably a congeries of blood Vessels.

172 It receives its blood from the Splenic Artery, a branch of Cæliac.

173 Its *Veins* pass to the Vena Portæ.

174 Its Nerves are derived from the Great Sympathetic and Eighth Pair.

175 Its *use* has been a matter of contention: it most probably contributes towards the process of Assimilation, first, by its capacity to receive various quantities of blood; and secondly, by effecting some change on it.

OMENTUM.

Answ.

176 The OMENTUM, or *Epiploon*, is a very large Duplicature of the Peritoneum;

177 It hangs loosely before the small Intestines.

178 It resembles a kind of flat bag, whose sides are in contact:

179 Its *Mouth*, or opening, is attached to the great Curvation of the Stomach, and to the Arch of the Colon, and may be separated by inflation.

180 It consists of two Laminæ connected by cellular substance, between which there are numerous portions of fat.

181 There is also a similar membrane, called the LITTLE OMENTUM, which is fixed to the small Curvature of the Stomach, and to the concave side of the Liver.

182 The Cavity of the Omentum communicates with the Abdomen, on the right side only under Glisson's Capsular, by a semilunar Orifice, called, the *Forâmen of Winslow*.

KIDNEYS.

183 The KIDNEYS are two glandular Bodies, of a red colour, destined to secrete the Urine.

184 They are *situated* on the posterior part of the Abdomen, on each side of the Lumbar Vertebræ; between the last false Ribs and Ossa Ilia.

185 The *right Kidney* lying under the great lobe of the Liver, is lower than the *left*, which lies under the Spleen.

186 The *Kidney* somewhat resembles the *form* of a large Bean: its circumference is convex on the outer side, and concave on the inner; the *posterior side* is broader and flatter than the *fore side*, and the *upper Extremity* is more incurvated, and larger than *the lower*.

187 The *Kidney* has no peritoneal investment, but it is every where surrounded by a *Proper Coat;* which

Answ.

consists of two Laminæ: of which the external is thin and adheres to the internal; this penetrates the substance of the Kidney every where by numerous elongations.

188 The Kidney consists of *two substances*, namely, an *External*, termed *Cortical Substance*, and an *internal*, named *Medullary Substance*.

189 The *Medullary Substance* is of a much paler colour, and more dense Texture than the Cortical; it is divided into a number of unequal conical portions; which terminate in nipple-like projections, called *Papillæ*, or *Mammillary Processes*.

190 The number of Papillæ varies from *eight* to *twelve*, or more.

191 Each Papilla is situated in a small funnel-like Cavity, called *Calix*, or *Infundibulum*.

192 The *Infundibula* join and form two or three tubes which ultimately form a large conical Cavity, called the *Pelvis of the Kidney;* it is placed in part within, but more without the Body of the Kidney, and is the commencement of the Duct of the Kidney, called,

193 The *Ureter;*

194 It descends, obliquely and slightly inflected, from the Kidney to the sides of the anterior part of the Os Sacrum; and, passing between the Rectum and Bladder, terminates in the last of these Viscera.

195 *Three Coats* compose the Ureter.

196 The *external* consists of a compact filamentary substance; the *middle one* of several Strata, or Fibres; and the *internal one* is of the mucous kind.

197 The *Artery* of the Kidney is called, the *Emulgent*, and comes directly from the Aorta.

198 The *Vein* of the same name goes to the inferior Cava.

199 The *Nerves* are chiefly from the Great Sympathetic and Eighth Pair.

200 The Emulgent Artery and Vein, and the Ureter enter the Kidney at its inner Edge—the Artery being the uppermost—the Pelvis, and beginning of the Ureter, behind and below the bloodvessels.

RENAL GLANDS.

201 The Renal Glands are two small, flat, dark yellow-coloured bodies; situated

202 Immediately above the Kidneys, on which they rest.

203 Each Gland is of an oblong, irregular, three-sided Figure.

204 A *Cavity* is frequently found within;

205 Of a narrow and triangular *figure;*

206 It is full of short, strong, yellow Villi, and a dark bile-like fluid.

207 They are much *larger* in the *Fœtus* than in the adult.

SECTION XXIX.

OF THE PELVIC VISCERA.

1 Under this head are comprised the *Urinary Bladder*, *Rectum*, and *parts of Generation.*

URINARY BLADDER.

2 The Urinary Bladder is a large membranous Bag, which serves as a reservoir for the Urine.

3 It is placed in the lower part of the Abdomen, and front of the Pelvis, immediately behind the Symphysis Pubis, above and before the lower part of the Rectum.

4 It is somewhat oviform; rounder above than below when empty; and broader below than above when full.

5 It is divided into a *Body*, a *Neck* turned downward and forward, and a *Fundus* turned upward.

6 It has *four Coats*, viz.

7 An external, or *Peritoneal;* a second, or *Muscular;* a third, *Cellular*, commonly called *Nervous;* and a fourth, *Villous*, or *Mucous Coat.*

8 The *Peritoneal Coat* covers only the Fundus, sides;

Answ.

and back part, to a little within the termination of the Ureters.

9 The Fibres of the *Muscular Coat* are collected into distinct bundles; the external ones are mostly longitudinal; the middle ones are inclined to each side, and the internal ones become more and more oblique; thus crossing each other in various directions.

10 The *Cellular*, or *Nervous Coat*, nearly resembles in structure and use the Tunic, of the same name in the Stomach and Intestines.

11 The *Internal*, *Mucous*, or *Villous coat*, though not thick, is of firm texture; it is thrown into folds, or Rugæ, when the Bladder is empty.

12 There are *three Openings* into the bladder, situated at the under part.

13 *One inferior*, which is the beginning of the Urethra, surrounded by the *Neck of the Bladder;*

14 Which is an elongation of the proper coats of the Bladder, terminating in the inferior Orifice.

15 *Two posterior openings*, which are the terminations of the Ureters,

16 Passing obliquely through the Coats of the Bladder, they open *an inch and a half* from each other, and from the Urethra.

17 At the top of the Bladder, above the Symphysis Pubis there is a ligamentary Rope, which ascends between the Peritoneum and the Linea Alba to the Umbilicus, called, the Urachus.

18 In the Fœtus it is hollow, but in the human subject its use is not understood.

19 The internal Iliac Arteries send branches to the Bladder.

20 Its *Veins* pass to the internal Iliac Veins.

21 Its *Nerves* come from the sacral and great Sympathetic Nerves.

MALE ORGANS OF GENERATION.

22 The Organs of Generation in the Male consist of, the *Testicles*, with the *Epididymis*, and *Vasa De-*

Answ. *ferentia*, contained in the *Scrotum; the Vesiculæ Seminales*, *Prostate Gland*, *Cowper's Glands*, and *Veru-Montanum*, about the neck of the Bladder; and lastly, the *Penis*, composed of the *Corpora Cavernosa*, *Corpus Spongiosum*, *Glans Penis*, and *Urethra*.

SCROTUM.

23 The Scrotum is a loose Bag, formed merely by a continuation of the Integuments, devoid of fat.

24 A projecting line, called, the *Raphe*, divides it into two equal parts.

25 The Cellular Substance on the inside of the Scrotum, is fibrous, and of a red colour, it has therefore by some been thought muscular, and called *Dartos*.

26 Loose Cellular Substance every where connects the Testicles to the Scrotum, and forms a *Septum* between them.

TESTES.

26* The Testicles are two glandular bodies of an oval figure, which secrete the Semen, and are contained in the Scrotum.

27 Each *Testicle* has two Coats, viz. the Tunica Vaginalis, and the Tunica Albuginea.

28 The *Tunica Vaginalis* surrounds the Testicle as the Pericardium does the Heart—adhering only at its posterior and superior part—its internal surface is lubricated by a serous fluid.

29 The *Tunica Albuginea* firmly invests the Testicle; and gives it form and support.

30 When the Tunica Albuginea is opened, the Testicle is seen to consist of an immense number of whitish tubes, called, *Tubuli Seminiferi*, folded in various ways, and distributed in different Fasciculi, between membranous Septa; the Septa are disposed longitudinally, diverging from the posterior edge of the Testicle from a white body, which may be termed the *Nucleus* of the Testis. At this Nucleus the Tubuli Seminiferi terminate in common trunks, form-

Answ.

ing the *Rete Testes;* which afterwards penetrate the upper part of the anterior extremity of the Testes, and are called the *Vasa Efferentia.*

EPIDIDYMIS.

31 The EPIDIDYMIS is an oblong, flattened body, *situated* along the lateral external part of the upper edge of the Testicle, as far as its posterior Extremity, from the common Trunks of the Tubuli Seminiferi, or Vasa Efferentia;

32 It in some measure resembles a flat arch, slightly concave on the under side, and irregularly convex on the upper side.

33 Its *anterior Extremity*, called its *Head*, arises from the Testicle, and receives the Vasa Efferentia; its posterior Extremity, or *Cauda*, which also adheres, becomes gradually smaller; the whole appears composed of one convoluted tube, which

34 Terminates in the excretory duct of the Testicle, called, the *Vas Deferens.*

VAS DEFERENS.

35 The VAS DEFERENS or Excretory Duct of the Testicle, is a small white Tube of dense structure.

36 It arises from the Epididymis.

37 It forms, in common with the blood vessels and nerves of the Testicle, the *Spermatic Chord*, in the Cellular Substance, of which it ascends to the Abdominal Ring, being situated behind the vessels; having reached the Peritoneum, it separates from the vessels and runs back, in a curved direction, through the Cellular Substance of the Peritoneum; descends to the nearest side of the Bladder, then passes behind it, covered by its Peritoneal Coat; it afterwards continues its course toward the Neck of the Bladder, where it terminates near its fellow. In this course it crosses the Umbilical Artery and the Extremity of the Ureter, passing behind the former, and between the latter and the Bladder.

VESICULÆ SEMINALES.

Answ.

38 The Vesiculæ Seminales are two small oblong, membranous Reservoirs.

39 *Situated* obliquely at the lower and under part of the Bladder, and before the Rectum; near each other anteriorly, but distant behind.

40 They are formed by a *Convolution of one Tube*, whose doublings are closely connected together, so that

41 *Internally* they appear composed of *Cells.*

42 Externally they are covered and connected to the Bladder and other surrounding parts, by cellular membrane.

43 The *Internal Coat* is a Villous Secreting Membrane.

44 The Vasa Deferentia, becoming larger, run between the contiguous Extremities of the Vesiculæ Seminales, and the termination of each is partly formed by the contiguous Vesicula, so that these extremities communicate on each side.

45 *Each Vesicle*, after joining the contiguous Vas Deferens, pierces the Prostate Gland, and opens into the Urethra.

46 The *Vesiculæ* secrete a peculiar fluid, but are not thought to retain the Seed.

PROSTATE GLAND.

47 The Prostate Gland is a firm glandular body.

48 Situated at the neck of the Bladder and beginning of the Urethra.

49 Somewhat of the *form*, and about the *size* of a Chesnut; broad behind, pointed before.

50 Its *basis* is turned toward the Bladder, its *Apex* toward the Urethra; its *inferior Surface* is convex and connected with the Rectum; through its substance, near the *superior Surface*, the Urethra passes.

51 It is of a *spongy*, but very *compact* texture, consisting of *numerous* Follicles.

Answ.

52 Their ducts, ten or twelve in number, open into the Urethra.

53 It secretes a peculiar thin white fluid, which mingles with the Seed.

ANTI-PROSTATÆ.

54 The Antiprostatæ, or *Cowper's Glands*, are two bodies of the size of a pea.

55 *Situated* before the Prostate, near the bulb of the Urethra.

56 Their ducts open near the beginning of the Urethra.

57 They contribute a fluid which lubricates the Urethra.

VERU-MONTANUM.

58 The Veru-Montanum, or *Caput-Galinaginis*, is a small oblong oval eminence,

59 *Situated* immediately within the Prostate, at the under part of the Urethra.

60 Its summit is pierced by the two Orifices of the Vesiculæ Seminales.

PENIS.

61 The Penis consists of the *Corpora Cavernosa*, *Corpus Spongiosum*, *Urethra*, and *Glans Penis*.

CORPORA CAVERNOSA.

62 The Corpora Cavernosa form the body of the Penis, they are two large ligamentary Tubes firmly united together;

63 *Situated* by the side of each other.

64 Their junction is marked by *two Grooves*, of which one is *superior*, the other *inferior* and much the largest.

65 The *Corpus Spongiosum Urethræ* is lodged in the lower Groove.

66 The *Vena Magna Penis* is placed in the upper Groove.

Answ.

67 They terminate, *anteriorly*, by a rounded Extremity, which is covered by the Glans Penis.

67* *Posteriorly* they are entirely separate, forming the *Crura Penis* which are attached to the edge of the Ramus of the Os Ischium and Os Pubis.

68 A dense *ligamentous sheet* forms their external part; internally they consist of *numerous cells*, which freely communicate with each other.

69 They are internally separated from each other by a particular Septum, called *Pecten*, which however is perforated by numerous Fissures.

URETHRA.

70 The **Urethra** is a long membranous Canal, extending from the neck of the Bladder to the end of the Penis.

71 It is lodged in the lower groove, between the two Corpora Cavernosa.

72 It is not throughout of equal bore, being most dilated in the Prostate Gland, again an inch and a half before it, and lastly just before its external Orifice.

73 It is a continuation of the Membrane which lines the Bladder.

74 It has numerous small openings on its surface leading to minute pouches, called *Lacunæ*.

75 Their openings are turned forward.

CORPUS SPONGIOSUM.

76 The *Urethra* is surrounded by a substance called the *Corpus Spongiosum Urethræ*, except at about a finger breadth and a half from its origin at the neck of the Bladder, this is called,

77 The *membranous part* of the Urethra, which is about an inch of its length before the Prostate.

78 The posterior commencement of the Corpus Spongiosum, is dilated into a conical prominence, called the *Bulb*.

79 Anteriorly it expands over the ends of the Corpora Cavernosa, and forms the *Glans Penis*.

Answ.

80 The Glans Penis is perforated anteriorly by the *Orifice* of the *Urethra;*

81 It is terminated posteriorly by a prominent edge, called *Corona Glandis.*

82 The Corpus Spongiosum, (forming the Bulb *behind* and the Glans *before*,) is composed of a Congeries of Veins.

83 The *Arteries* of the Penis come from the internal Pudendal; these pour their Blood into the cavernous bodies.

84 The *Veins* receive the blood from the cells of the Corpora Cavernosa, they then form the Corpus Spongiosum, which is an extensive plexus of Veins, from this several branches pass to the Dorsum Penis, and join the Vena Magna Penis; this passes under the arch of the Pubis, where it opens into another considerable plexus which surrounds the Prostate and neck of the Bladder, and finally the Hypogastric Veins receive the Blood.

85 This mechanism explains Erection: the Arteries, acting with increased velocity, distend the Corpora Cavernosa with Blood, where it is retained on account of the peculiar construction of the Veins, through whose plexus it flows slowly.

INTEGUMENTS OF THE PENIS.

86 The common Integuments, devoid of fat, afford a loose and very movable covering to the *Penis*, except on the Glans, where they are very firmly adhering, and of much more delicate structure.

87 Immediately behind the Corona Glandis the Integuments form a loose doubling, called the *Præputium*, which, in the unerected state, covers the Glans.

88 A fold of the Præputium at the under part of the Glans, is called *Frænum.*

FEMALE ORGANS OF GENERATION.

Answ.

89 The Female Organs of Generation are divided into *external* and *internal parts.*

90 The *internal parts* are the *Uterus*, and its appendages, viz. the *Fallopian Tubes*, *Ovaria*, *Spermatic Vessels*, *Ligamenta Lata*, *Ligamenta Rotunda*, and the *Vagina.*

91 The *external parts* are the *Pubis*, the *Labia Pudendi*, the *Nymphæ*, the *Clitoris*, the *Orifice of the Urethra*, and the *Orifice of the Vagina.*

INTERNAL PARTS.

UTERUS.

92 The Uterus, or Womb, is a hollow, fleshy viscus, destined to retain and nourish the Fœtus.

93 It is *placed* between the Bladder and Rectum.

94 It is somewhat of the *figure* of a flat flask, about three fingers' breadth in length, one in thickness, two in breadth at one end, and scarcely one at the other.

95 It is divided into its *Fundus*, or upper part; *Body*, or middle; *Cervix*, or Neck, which is turned downward.

96 The *Cavity of the Uterus* is small, owing to the great thickness of its sides; it is flat and resembles an oblong triangle, the shortest side of which corresponds to the Fundus, and two longest sides toward each hand; while all of them bend inward to the cavity which they form.

97 There are *three* Openings into the Cavity of the Uterus, *two* at the angles of its Fundus, and *one* at its Neck.

98 Those at the Fundus lead to the Fallopian Tubes,

99 They with difficulty admit a bristle.

100 The Opening at the Cervix leads to the Vagina,

101 It is wider than those at the Fundus, and of a flat form,

102 It is called the *Internal Orifice of the* Uterus, *Os Uteri*, or *Os Tincæ.*

Answ.

103 A very *fine Membrane* lines the Cavity of the UTERUS.

104 In the Neck, which leads to the Os Tincæ the internal Membrane forms *Rugæ.*

105 The *Openings* of many *Follicles* are to be seen about the *Os Uteri.*

106 The UTERUS is of a spongy, yet compact structure, with an intertexture of numerous vessels.

107 It is covered externally by a portion of the *Peritoneum* continued from that which covers the Bladder and Rectum.

108 The Laminæ of the portions of Peritoneum, which covers the Uterus meeting on each side, form two duplicatures, called the *Broad Ligaments*, or Ligamenta Lata,

109 They pass from the edges of the Uterus to the sides of the Cavity of the Pelvis, thus transversely dividing it into two, an anterior and a posterior Cavity.

110 The twofold superior edges of the Ligamenta Lata are called *Alæ*, or *Pinions.*

111 Between the Laminæ of the Ligamenta Lata are contained the Fallopian Tubes, the Ovaria, some of the Spermatic Vessels, those of the Uterus, the round Ligaments, and Nerves.

112 The *Ligamenta Rotunda*, or *Round Ligaments*, are two long chords, which arise from the superior part of the sides of the Uterus; they pass between the Laminæ of the Ligamenta Lata, and then forward toward the Abdominal Ring, through which they pass to the Pubis, where they are fixed.

OVARIA.

113 The OVARIA are two oval, oblong, flat bodies, in which the rudiments of the Fœtus are supposed to be formed.

114 They are *situated* in the duplicature, called the Posterior Pinion of the Ligamenta Lata, near the Fundus of the Uterus.

115 In addition to the Broad Ligaments, *two short round Ligaments* attachthem to the Uterus.

Answ.

116 They consist of a compact spongy substance, and of several small transparent vesicles, called Ova, which contain a glairy fluid.

FALLOPIAN TUBES.

117 The Fallopian Tubes are two small worm-like Tubes, which receive the Rudiments of the Fœtus from the Ovaria, and convey them to the Womb.

118 They proceed from the angles at the Fundus Uteri, towards the lateral parts of the Pelvis; being included in the anterior Pinions of the Ligamenta Lata.

119 Their Cavities scarcely admit a large bristle at their opening into the Uterus, but they become gradually larger towards the opposite Extremities.

120 *Their outer Extremities* would admit a goose-quill: they are irregularly round, and expand in the form of a membranous fringe, called the *Fimbriæ;*

121 These Extremities are directed towards the Ovaria.

122 They are loose and unconnected, except, when under the influence of impregnation, they expand and embrace the Ovaria.

123 These Tubes are lined with a fine membrane, which is thrown into longitudinal folds.

124 Their *structure* seems to be spongy, somewhat resembling that of the Uterus.

VAGINA.

125 The Vagina is a large fleshy Tube, extending from the Cervix Uteri to the external parts.

126 It is *situated* behind and below the Bladder and Urethra, before and above the termination of the Rectum.

127 Into its upper part the Os Uteri projects.

128 It is fixed to the neck of the Uterus.

129 *Anteriorly* it is firmly united to the Urethra, and a more loose cellular membrane connects it with the Bladder.

Answ.

130 *Posteriorly*, at the lower part it is connected by cellular Substance, to the Rectum.

131 It is covered by *Peritoneum* at its upper and posterior part.

132 Its substance is thick and strong; it is lined internally by a mucous membrane, which is thrown into numerous *Rugæ*.

ARTERIES, VEINS, AND NERVES OF THE UTERUS, &c.

133 The Uterus is supplied by the Hypogastric Arteries, and the Ovaria by the Spermatic Arteries.

134 The *Veins* correspond in name and distribution with the Arteries.

135 They receive their *Nerves* from the Lumbar Sacral and Sympathetic Nerves.

EXTERNAL PARTS.

PUBIS.

136 The External Parts taken together are called, the *Pudendum*, or *Vulva*.

137 The Pubis, or *Mons Veneris*, is that broad eminence at the lower part of the Hypogastrium, between the two groins, which, at the age of puberty, is covered with hair.

138 Its hairy Integuments are made prominent by a particular thickness of the Adipose Membrane covering the fore part of the Ossa Pubis.

LABIA PUDENDI.

139 The Labia Pudendi reach from the middle of the lower part of the Pubis to within an inch of the Anus.

140 The points at which they meet are called the *Commissures*,

141 They are formed by a large longitudinal fold of Integuments containing cellular substance and fat: *externally* they are covered with hair; but the

Answ.

sides, which are turned towards each other, are smooth and lubricated.

142 The space situated between the inferior Commissure of the Labia and the Anus, is called *Perineum*,

143 It measures about a large finger's breadth.

144 On separating the Labia the following parts appear: two longitudinal folds, called the *Nymphæ;* at the angle formed superiorly by their junction a small fleshy body, called *Clitoris;* under this the opening of the *Urethra;* more inferiorly the opening of the *Vagina;* between which and the inferior Commissure a depression, called *Fossa Navicularis.*

NYMPHÆ.

145 The Nymphæ are two folds of the inner skin of the Labia.

146 *Situated* internal to the Labia, and taking nearly the same direction.

147 They are narrow at their upper part, become broader as they descend, and contract at their lower Extremity.

148 They consist of a spongy, cuticular substance, intermixed with Follicles.

149 Their lower Extremities are distant from each other, their upper unite around the Clitoris.

CLITORIS.

150 The Clitoris is an oblong, firm, projecting body.

151 *Situated* immediately under the superior Commissure of the Labia.

152 A Duplicature of the internal Membrane, called its *Præputium*, surrounds it at the beginning of the Nymphæ.

153 It consists, like the Penis, of two *Corpora Cavernosa* united together, anteriorly forming the *Glans*, and divided posteriorly into two *Crura.*

154 The *Crura* are attached to the Rami of the Ossa Pubis.

155 It is capable of erection, which is effected in the same manner as in the Penis, and it is supposed to be the chief seat of sensation in coition.

URETHRA.

Answ.

156 The **Urethra** is situated between the Nymphæ, and below the Clitoris, just above the Vagina.

157 The *Orifice* is slightly prominent and wrinkled.

158 On the edges of its Orifice several *Lacunæ* are situated, and others internally.

159 It is a membranous Tube of the same structure as in Males.

160 The *Female Urethra* is not more than an inch in length, but it is wide; it has no prostate Gland.

THE ORIFICE OF THE VAGINA.

161 The **Orifice of the Vagina** is placed immediately below the Urethra, and above the Fossa Navicularis.

162 It is narrower than the rest of the Vagina.

163 At its under part a delicate membrane is situated, called the *Hymen.*

HYMEN.

164 The **Hymen** is a delicate membranous fold, of a semilunar form, whose cornua are turned upwards.

165 It does not completely close the Vaginal Orifice, being defective towards the Urethra.

166 When torn in coitu, or otherwise, the remains form little small fleshy eminences, called, *Carunculæ Myrtiformes.*

167 The use of the *Hymen* is not evident; it is not, as has been supposed, a test of virginity.

OF THE ORGANS OF THE SENSES.

1 The **Organs of the Senses** are parts constructed to receive impressions from all external objects.

2 They are five in number, viz. first, for the Sense of Sight, *the Eyes;* secondly, for the Sense of Smell,

the Nose; thirdly, for the Sense of Hearing, *the Ears;* fourthly, for the Sense of Taste, *the Mouth and Tongue;* fifthly, for the Sense of Feeling, *the Skin.*

SECTION XXX.

ORGAN OF VISION.

1 The Organ of Vision is twofold, there being two Eyes,

2 *Situated* in the Orbits, surrounded by Muscles, which move them, and an apparatus for tears; these parts are called, the *Appendages of the Eye.*

ORBITS.

3 The Orbits are two conical, or funnel-like Cavities.

4 *Situated* on each side of the Nose, just below the forehead; their bases are turned forward, and obliquely outward.

5 Each Orbit is composed of parts of *seven Bones*, viz.

6 The *Os Frontis*, *Os Sphænoides*, *Os Ethmoides*, *Os Maxillare Superius*, *Os Malæ*, *Os Lachrymale*, and *Os Palati.*

7 The *Os Frontis*, *Os Maxillare Superius*, and *Os Malæ*, form the *basis* or ridge of the Orbit.

8 The *Os Sphænoides*, and *Os Palati*, form its *Apex.*

9 The *Os Frontis* above, the *Superior Maxillary Bone*, and *Os Malæ* below, the *Os Lachrymale* and *Os Ethmoides* towards the Nose; and the *Os Sphænoides* towards the Temple, complete its sides.

10 *Three great Foramina* are noticed in the Orbit, namely, the *Foramen Opticum*, the *Fissura Sphænoidalis*, and the *Fissura Sphæno-Maxillaris.*

11 The *Foramen Opticum* is a large round hole at the Apex.

12 The *Sphænoidal Fissure*, or *Foramen Lacerum Orbitale Superius*, is situated at the upper part of its external side.

13 The *Sphæno-Maxillary Fissure*, or *Foramen Lacerum Orbitale Inferius*, is situated at the lower part of its external side.

Answ.

14 Its lining is derived from the Dura Mater, and Periosteum of the Face.

LACHRYMAL AND EXTERNAL PARTS OF THE EYE.

SUPERCILIA.

15 The Supercilia, or *Eyebrows*, are situated upon the superciliary ridge of the Frontal Bone.

16 They consist of two arches of hairs, placed upon an additional Portion of the Adipose Membrane.

17 They are moved by the *Occipito-Frontalis*, and *Corrugator Supercilii.*

PALPEBRÆ.

18 The Palpebræ, or *Eyelids*, are placed transversely above and below the anterior Portion of the globe of the Eye.

19 The *superior* is the largest and most movable.

20 Their Extremities meet, forming an *outer* and an *inner Canthus*, or *angle;*

21 That towards the Nose is the largest.

22 They consist of common *Integuments;* of the *Orbicularis Palpebrarum;* of the Cartilages called *Tarsi*, which contain the *Ciliary Glands;* and of the *Cilia*, or *Eyelashes.*

TARSI.

23 The Tarsi are thin Cartilages,

24 *Situated* at the Edge, and in the substance of each Eyelid.

25 They are broader in the middle than at their Extremities; the *Tarsus* of the upper Eyelid is the largest.

26 Their *Ciliary Edges*, which are turned toward each other, are the thickest.

27 These edges are so formed, that when they meet, a *small groove* is made betwixt them and the Eyeball, which conduct the tears to the inner Canthus.

28 The *internal Surfaces* of the Tarsi are grooved for the reception of the Ciliary Glands.

CILIARY GLANDS.

Answ.

29 The Ciliary Glands, or *Glandulæ Meibomianæ*, secrete an unctuous matter, which lubricates the edges of the Eyelids.

30 They are *situated* on the inner side of the Tarsi.

31 They appear like numerous white lines, taking a tortuous course to the edge of the Eyelids, where the openings of their ducts may be seen.

CILIA.

32 The Cilia, or *Eyelashes*, are rows of pencil-like hairs.

33 *Situated* on the edges of the Eyelids.

34 They diverge; those of the upper Eyelid turn gradually upward; and those of the lower, which are shorter, take the opposite course.

35 The middle hairs are longest; they diminish in size towards the corners.

LACHRYMAL APPARATUS.

36 The Lachrymal Apparatus consists of the *Lachrymal Gland*, which secretes, and of the parts which convey away the tears, viz. the *Caruncula Lachrymalis*, *Plica Semilunaris*, *Puncta Lachrymalia*, *Canaliculi Lachrymales*, *Lachrymal Sac*, and *Ductus ad Nasum.*

LACHRYMAL GLAND.

37 The Lachrymal Gland is situated in the depression, behind and somewhat above the external angular process of the Frontal Bone.

38 It is somewhat flatted and divided into *two lobes*, the greater of which is the most external.

39 It has several *excretory ducts*, which descend almost parallel to each other, through the substance of the membrane which lines the upper Eyelid, and pierce it near the superior edge of the Tarsus.

CARUNCULA LACHRYMALIS.

Answ.

40 The Caruncula Lachrymalis is a little red eminence,

41 *Situated* between the internal angle of the Eyelids and the ball of the Eye.

42 It sems to be of glandular structure.

43 It secretes a yellowish oily matter, with which the hairs on its surface being besmeared, detain any small bodies that float in the tears; it also directs and assists the tears in their course.

44 The depression betwixt this, the Eyelids and Eyeball, has been called, *Lacus Lachrymalis;*

45 Here the tears collect to pass into the Puncta Lachrymalia.

PLICA SEMI-LUNARIS.

46 The Plica Semi-Lunaris is situated between the Caruncula Lachrymalis and the Ball of the Eye.

47 It resembles the figure of a crescent.

48 Its Cornua are turned toward the Puncta Lachrymalia.

49 It serves to direct the tears toward the Puncta.

PUNCTA LACHRYMALIA.

50 The *Puncta Lachrymalia* are two small orifices,

51 *Situated* one on the edge of each Eyelid, very near the inner angles, opposite to the Cornua of the Plica Semi-Lunaris, and precisely opposite to each other.

52 A minute cartilaginous circle surrounds them, and a fine membrane lines their orifices.

53 Their outer edges touch each other when the Eyelids close.

54 They suck up the tears and convey them to the Lachrymal ducts.

CANALICULI LACHRYMALES.

Answ.

55 The **Canaliculi Lachrymales**, or *Lachrymal Ducts*, are two minute Canals.

56 *Situated* between the Puncta Lachrymalia and the Lachrymal Sac.

57 The superior first ascends, then gradually descends; the inferior first descends, then gradually ascends; they then meet and form a common tube, which opens into the Lachrymal Sac.

LACHRYMAL SAC.

58 The **Lachrymal Sac** is situated immediately below the inner Canthus of the orbit in a *bony Groove*, or fossa, on the side of the upper part of the Nose.

59 This *Groove* is *formed* by the Nasal process of the superior Maxillary and Lachrymal Bones superiorly, and by the Os Maxillare, lower part of the Os Lachrymale, and upper portion of the inferior turbinated bone inferiorly.

60 The *Sac* is an oblong membranous bag.

61 About one fourth of its length is above the tendon of the Orbicularis Palpebrarum, and the rest below it.

62 The Lachrymal Ducts open into it immediately behind the tendon of the Orbicularis.

63 The *Ductus ad Nasum* proceeds from its lower part.

DUCTUS AD NASUM.

64 The **Ductus ad Nasum** descends from the Lachrymal Sac into the Nose, in a *bony Groove*, which is

65 *Formed* by the inferior part of the Os Lachrymale and superior part of the Inferior Turbinated bone.

66 The *Duct* terminates underneath and behind the anterior extremity of the inferior turbinated bone.

67 The **Tears**, secreted by the *Lachrymal Gland*, are poured, by its *Excretory Ducts* over the anterior surface of the Eye; which, in the movements of

Answ. the Eyelids, they every where moisten; the *Puncta Lachrymalia* absorb them; they are conveyed, by the *Lachrymal Ducts*, to the *Lachrymal Sac*, and through the *Ductus ad Nasum*, they pass into the Nose.

THE GLOBE OF THE EYE.

68 The GLOBE OF THE EYE is nearly of a spherical figure.

69 Its anterior transparent part projecting somewhat, appears like the section of a lesser sphere.

70 It is composed of Membranes, or Coats, filled with *Humors*, or fluids, which prop its form.

COATS OF THE EYE.

71 The COATS OF THE EYE are six in number, namely, the *Tunica Conjunctiva*, *Tunica Sclerotica*, *Cornea*, *Tunica Choroide* , *Iris*, and *Retina.*

72 They are divided into *partial* and more *complete Coats*, the Conjunctiva, Cornea, and Iris belonging to the former; the Sclerotica, Choroides, and Retina to the latter class.

TUNICA CONJUNCTIVA.

73 The TUNICA CONJUNCTIVA is a very thin transparent Membrane, which connects the Eyelids to the Globe of the Eye, and may be considered as common to both.

74 It covers the anterior part of the ball of the Eye and the inner side of the Eyelids; hence its division

75 Into the *Conjunctiva Palpebrarum*, and the *Conjunctiva Oculi.*

76 It is united to the Globe of the Eye by means of cellular Membrane.

77 This union is very firm over the Cornea.

TUNICA SCLEROTICA.

Answ.

78 The Tunica Sclerotica is the most external, and by far the most dense coat of the Eye.

79 It envelops all the ball of the Eye, except the portion anteriorly occupied by the Cornea; and posteriorly it is pierced by the optic Nerve.

80 It is of a firm ligamentous structure.

81 Its posterior part is the thickest.

82 The Muscles which move the Eyeball are attached to this coat toward its anterior part.

TUNICA CORNEA.

83 The Cornea is the transparent anterior part of the Globe of the Eye.

84 It is firmly connected to the edge of the Sclerotica, and appears like a watch-glass fixed in the edge of the case.

85 It is circular and more convex than the rest of the ball.

86 It is divisible into several Lamellæ, between which a transparent fluid is noticed.

TUNICA CHOROIDES.

87 The Tunica Choroides is the most vascular Coat of the Eye.

88 It is placed immediately within the Sclerotic Coat.

89 It begins at the entrance of the optic Nerve.

90 It ends near the edge of the Cornea, forming a whitish circle of some firmness, called, the *Ciliary Circle*, and by which it adheres to the Sclerotica.

91 It here appears thrown into numerous regular folds, called, *Ciliary Processes.*

92 The internal surface of the Choroid Coat is uniformly covered by a black, or dark brown secretion, called, *Nigrum Pigmentum.*

93 The *Ciliary Arteries*, after piercing the Sclerotica,

ramify copiously in this Membrane; its veins, taking a curious contorted course, are called, *Vasa Vorticosa*.

IRIS.

94 The Iris is a circular Membrane, with an opening through its centre, forming an imperfect Septum across the Cavity of the Eye.

95 Its circumference is attached to the Ciliary Circle.

96 The circular aperture at its centre is called, the *Pupil*, which is lessened or augmented by the movements of the Iris.

97 The name of *Uvea* has been given to the posterior part of the Iris, this part is covered with the Nigrum Pigmentum.

98 It consists of a *radiated* and *circular layer* of muscular fibres; its *Arteries*, from the Ciliary form, by anastomosis, two circles, one near the circumference, called, *Zona Major*, the other near the pupil, called, *Zona Minor*. Its *Veins* pass to the Vasa Vorticosa of the Choroid.

RETINA.

99 The Retina is placed internal to the Choroid Coat.

100 It arises from the termination of the Optic Nerve of which it is an expansion.

101 It extends anteriorly nearly to the Ciliary Circle, terminating upon the edge of the Crystalline Capsule.

102 The Optic Nerve terminates a little to the inner side of the centre.

103 The *Foramen of Sommering*, and the *yellow Zone* surrounding it, are parts observable posteriorly, directly at the centre of the Retina.

104 It is composed of a pulpy substance of a bluish milky hue;

105 Supplied with blood by a small artery, which occupies the centre of the Optic Nerve.

HUMORS OF THE EYE.

Answ.

106 Three transparent fluids of different densities form the Humors of the Eye.

107 They are called, the *Aqueous*, the *Crystalline*, and the *Vitreous Humors.*

AQUEOUS HUMOR.

108 The Aqueous Humor is a perfectly transparent limpid fluid.

109 Situated behind the Cornea, and before the Crystalline.

110 The space which it occupies is divided by the Iris into two cavities, called *Chambers*, and which communicate through the pupil.

111 The *anterior Chamber* is the largest of the two.

112 This humor, while it transmits the rays of light, permits the free motions of the Iris.

VITREOUS HUMOR.

113 The Vitreous Humor, by much the most bulky humor of the Eye, appears of a jelly-like consistence, yet quite transparent.

114 It occupies all the ball of the Eye behind the Crystalline Lens, which lies imbeded in its fore part.

115 It is spherical, except anteriorly, where it receives the Crystalline Lens.

116 It is surrounded by its peculiar Capsule, called *Tunica Vitrea*, or *Hyaloidea*, of the most delicate and transparent texture.

117 It is divided, by numerous Septa proceeding from the inner surface of its Capsule, into numerous cells, which contain a fluid much resembling the Aqueous Humor.

CRYSTALLINE LENS.

Answ.

118 The Crystalline Humor, or Lens, is of solid texture.

119 It is *situated* in a concavity at the anterior part of the Vitreous, behind the Aqueous Humor, opposite to the Pupil.

120 It resembles a Lens, or magnifying glass; its posterior surface is more convex and larger than the anterior.

121 It has a proper Capsule, which adheres firmly to the Capsule of the Vitreous Humor.

122 It consists of concentric Lamellæ, and these of Radii; it is of the consistence of softened gum, but is found much firmer towards the centre than externally.

MUSCLES, VESSELS, AND NERVES OF THE EYE.

123 *Six Muscles* move the eye, they have been already described.

124 Its *Arteries* are derived chiefly from the Ophthalmic, a branch of the internal Carotid.

125 The Eye and its appendages are copiously supplied with Nerves, for besides the *Optic*, which forms the Retina, the *third and fourth pairs*, the *Ophthalmic*, or *first branch of the fifth pair*, the *sixth pair*, and *twigs* from the *seventh pair* go to the surrounding parts, and form the *Ciliary Plexus*, whose branches pierce the Sclerotica, and pass to the Iris.

USE OF THE PARTS OF THE EYE.

126 The *Cornea* collects and bends inward the rays of light reflected towards it from surrounding objects.

127 The *Aqueous Humor* allows them a ready passage, and admits freely of the motions of the Iris.

128 The *Crystalline Lens* still further concentrates the rays of light so as to make a distinct image at the bottom of the Eye.

Answ.

129 The *Vitreous Humor*, filling the Membranes, supports the figure of the Eye, which is essential to the due performance of its office, and maintains the Lens at its focal distance from the Retina.

130 The *Retina* perceives the picture formed upon its surface by the due collection, refraction and transmission of the rays of light.

131 The *Choroid* is the Vascular Coat of the Eye, allowing the ramification of vessels, and secreting the Nigrum Pigmentum.

132 The *Nigrum Pigmentum* prevents the reflection of the rays of light when once they have reached the Retina, and thus confusion is avoided.

133 The *Iris*, by contracting, excludes all the superfluous rays reflected from a luminous body, or by expanding, admits through the Pupil all that pass through the Cornea, in case any object should be sparingly lighted.

134 The *Sclerotica* by its figure bounds the form of the Eye, and by its strength protects and supports the parts which it contains.

SECTION XXXI.

OF THE ORGAN OF SMELL.

1 The Organ of Smell, or Nose, is much more extensive than would be conjectured from the external prominent part to which the name of *Nose*, in common language, is given. It is a double cavity, divided by a perpendicular partition.

2 It is *situated* between and below the orbits, above the mouth and below the forehead.

3 It is *divided* into its external prominent part, properly called *Nose*, and its internal Cavity.

4 The *External Part* consists of the *Root* of the Nose, the *Arch* of the Nose, the *Tip* of the Nose, the *Alæ* and the *Nostrils*, or anterior openings of the Cavities of the Nose.

5 The *Internal Part*, or Cavity, contains the *Septum Narium*, the *turbinated bones*, the *posterior Open-*

Answ.

ings of the Nares, the *Frontal*, *Maxillary*, and *Sphænoidal Sinuses*, the *Palatine Duct*, and *Ductus ad Nasum.*

6 The bony parts of this Organ are, the *Os Frontis*, *Os Ethmoides*, *Os Sphænoides*, *Ossa Maxillaria*, *Ossa Nasi*, *Ossa Lachrymalia*, *Ossa Palati*, *Vomer*, *Inferior Turbinated Bones and Cartilages.*

7 The soft parts are the *Integuments*, *Muscles*, *Pituitary Membrane*, *Vessels*, *Nerves*, and *Hairs* of the Nares.

8 The *Root* and *Arch*, or *Dorsum*, of the Nose are formed by the Nasal process of the Superior Maxillary Bone, and the Ossa Nasi.

9 The remainder of the external Nose is composed of *five Cartilages.*

10 The *middle one* is part of the Septum Nasi, it divides the Nostrils; *two* placed anteriorly form the *tip*, and *two* laterally the *Alæ*, and these surround the Nostrils.

11 The *Cavities* of the Nose extend from the Nostrils, to the posterior openings of the Nares, immediately above the arch of the Palate. They extend upward to the Cribriform Plate of the Ethmoid Bone, and there communicate, forward, with the *Frontal Sinuses;* and backward with the *Sphænoidal Sinuses.* Laterally they are bounded on the inner side by the Septum, and on the outer side by the Maxillary, Lachrymal, Ethmoid, and Turbinated Bones; above the latter they communicate with the *Maxillary Sinuses.*

PITUITARY MEMBRANE.

12 The whole of the Cavities of the Nose are lined by the *Pituitary Membrane.*

13 It serves for the expansion of the Olfactory and other Nerves, for the transmission of Vessels, and the secretion of the fluid which moistens its surface.

14 It is thickest upon the Septum Narium, the turbinated Bones, and the lower part of the Nares.

SINUSES.

15 The *Frontal*, *Sphænoidal*, and *Maxillary Sinuses*, open into the internal Nares.

Answ.

16 The *Frontal Sinuses* open into the anterior superior part of the Nares.

17 The *Sphænoidal Sinuses* open into the superior posterior part of the Nares.

18 The *Maxillary Sinuses* open laterally above the inferior turbinated Bones.

DUCTUS INCISIVI.

19 The Ductus incisivi in the human subject usually only exist in the bones, and are filled by soft parts.

20 They are *situated* behind the large superior Dentes Incisivi, between the arch of the Palate and the bottom of the Nares.

21 They transmit several Twigs of Arteries and Veins, and sometimes are perforated by Ducts, the use of which is at present unknown.

BLOOD VESSELS AND NERVES OF THE NOSE.

22 The External Carotids supply the Nose and its Cavities with Blood, the *Veins* go to the external Jugulars.

23 The *Olfactory* are the chief Nerves of the Nose, or the Nerves of smelling; but the Nose also receives Nerves of common sensation from the *fifth pair*.

SECTION XXXII.

OF THE ORGAN OF HEARING.

1 The Organ of Hearing, commonly called, the *Ear*, is twofold, there being a distinct and perfect Organ *situated* on each side of the Head, the most important parts of which are formed in, and contained by the Temporal Bone.

2 Each is divided into the *external* and *internal Ear*.

EXTERNAL EAR.

3 The External Ear consists of a considerable Cartilage invested by common Integuments.

Answ.

4 It is *divided* into three parts, namely, *the Pinna*, *Lobus*, and *Meatus Auditorius Externus.*

PINNA.

5 The *Pinna* forms the greater part of the outer Ear.

6 It *consists* of the Cartilage, invested by common Integuments.

7 On its anterior or external side are four Eminences, namely, the *Helix*, *Antihelix*, *Tragus*, and *Antitragus.*

8 The HELIX forms the large external margin, or hem, of the outer Ear, and extends across its middle.

9 The ANTIHELIX is the oblong elevation forming an inner margin, and immediately surrounded by the Helix.

10 The TRAGUS is the small anterior protuberance below the anterior end of the Helix.

11 The ANTITRAGUS is the posterior protuberance below the inferior end of the Antihelix, and opposite the Tragus.

12 There are three depressions on the Pinna, namely, the *Fossa Navicularis*, the *Fossa Innominata*, and the *Concha.*

13 The *Fossa Navicularis* is placed in the bifurcation of the superior extremity of the Antihelix.

14 The *Fossa Innominata* is situated between the anterior and superior extremities of the Helix and Antihelix.

15 The CONCHA is the great Cavity surrounded by the Antihelix, and divided transversely by the anterior part of the Helix, which on this account, is called the *Septum Conchæ.*

16 When the Integuments are removed, there are *four fissures* noticed in the Cartilage which forms the Pinna, viz. *one* situated upon the anterior part of the Helix; *one* between the terminations of the Helix and Antihelix; and *two* in the base of the Tragus, or perhaps more properly in the commencement of the Meatus Externus.

Answ.

17 *Three Ligaments* fix it in its place, namely, a *superior*, an *anterior*, and a *posterior*.

18 The *Muscles* have been described at page 91.

19 The Integuments of the Pinna are plentifully supplied with *Sebaceous Glands*.

LOBULUS.

20 The Lobe forms the inferior extremity of the External Ear.

21 It consists of skin and cellular substance.

MEATUS AUDITORIUS EXTERNUS.

22 The Meatus Auditorius Externus extends from the bottom of the Concha inward, to the Membrana Tympani.

23 It is *directed* inward, forward and upward, and is, in its course, a little curved downward.

24 It is about an inch long,

25 Wider at its extremities than in the middle.

26 Its *bore* is not quite circular, but a little oval.

27 It consists in part of Cartilage continued from the Pinna, and in part of Bone.

28 The *bony portion* is the longest in the adult; but in the Fœtus the Meatus Auditorius is wholly cartilaginous.

29 The *Cartilaginous portion* has two fissures; one of which is situated immediately under the Tragus, and the other at a little distance from it.

30 It is lined by a continuation of the Integuments of the Concha, under which the *Ceruminous Glands* are placed, especially towards the Concha;

31 They secrete the *Cerumen*, or *Ear Wax*, which is discharged through small excretory ducts, into the Meatus Auditorius.

ARTERIES, VEINS, AND NERVES OF THE EXTERNAL EAR.

32 The External Ear receives its Arteries anteriorly, from the *Temporal;* and, posteriorly, from the *Occipital Artery*.

Answ.

33 Its Veins pass to the *External Jugular.*

34 Its Nerves are derived from the *Portio Dura*, and *second Vertebral Pair.*

INTERNAL EAR.

35 The INTERNAL EAR is divided into three parts, namely, the *Tympanum*, *Labyrinth*, and *Meatus Internus.*

MEMBRANA TYMPANI.

36 The MEMBRANA TYMPANI is *situated* at the bottom of the Meatus Externus, forming the external side of the Tympanum.

37 It is fixed in a bony groove.

38 It is of an oval form, placed obliquely; its upper part being turned outward, and its lower part inward.

39 It is slightly concave externally.

40 It is *composed* of *two laminæ;* of which the *internal* is a production of the Periosteum of the Tympanum; and the *external* of the Cuticle lining the Meatus Externus; which, by Maceration, may be removed like the finger of a glove.

41 The *Malleus*, a very small bone contained in the Tympanum, is attached to this Membrane, and across its upper part runs a small Nerve, called *Chorda Tympani.*

TYMPANUM.

42 The TYMPANUM is a Cavity *situated* immediately within the Membrana Tympani, in the substance of the Temporal Bone.

43 Its *form* is irregular, resembling a portion of a Cylinder; its *outer side* is formed by the Membrana Tympani; its *inner side* is bony, and divides this Cavity from the Labyrinth; its *circumference* is irregular.

44 *Two openings* are remarkable in the *circumference*, viz. one *anteriorly* from the Eustachian Tube, and another *posteriorly* to the Mastoid Cells.

45 It is lined by a Vascular Periosteum.

46 It contains *Air*, and the *Ossicula Auditus*, with their *Muscles* and *Ligaments.*

EUSTACHIAN TUBE.

Answ.

47 The Eustachian Tube extends from the Cavity of the Tympanum to the root of the Pterygoid process of the Sphœnoid Bone; here it opens into the upper part of the Fauces, just behind the posterior Nares.

48 It consists of a bony, a cartilaginous, and a membranous *portion.*

49 The extremity towards the Tympanum is wholly of *bone;* of the rest, bone forms only the upper part.

50 *Cartilage* forms the internal, and *Membrane* the external parts of its lower side.

51 Its bony part is by much the narrowest, it expands in the form of a trumpet towards the mouth.

52 These Tubes, one for each ear, are *directed* from the Tympanum obliquely inwards, downwards, and forwards; so that their anterior extremities, in the Fauces, are the nearest to each other.

53 They are lined by a Membrane resembling that of the Nares.

MASTOID CELLS.

54 The Mastoid Cells open into the posterior and upper part of the Tympanum, by a considerable aperture.

55 In the adult the Mastoid process of the Temporal Bone is wholly cellular.

56 They are lined by a Vascular Periosteum.

57 They contain air.

BONES OF THE EAR.

58 The Ossicula Auditus, or *Bones of the Ear*, are four in number, namely, the *Malleus*, the *Incus*, the *Os Orbiculare*, and the *Stapes.*

59 They form a kind of chain from the Membrana Tympani to the Labyrinth.

60 The most external is the *Malleus*, situated next to the Membrana Tympani; next to this is the *Incus;* then the *Os Orbiculare;* and lastly, the most internal is the *Stapes.*

MALLEUS.

Answ.

61 The **Malleus**, or *Hammer*, is placed upon the inner side of the Membrana Tympani, to which it is fixed by its handle.

62 It consists of a *handle*, attached to the Membrana Tympani, having its extremity turned downward; a *short process* at the top of the handle; also turned toward the Membrana Tympani; a *long process*, called *Processus Gracilis*, which is turned forward, over the inner edge of the ring of the Membrane; a *neck* which projects inward from the handle, forming an angle with it, and surmounted by a *round head*, by which it is connected to the Incus.

63 This Bone has three Muscles, described at page 92, namely, the *Tensor Tympani*, fixed to the posterior and upper part of its handle; the *Laxator Tympani Major*, attached to its long process; and the *Laxator Tympani Minor*, fixed near its short one.

INCUS.

64 The **Incus**, or *Anvil*, is *situated* between the Malleus and Os Orbiculare, extending backward toward the Mastoid Cells.

65 It consists of a *Body*, a *short* and *long leg:* its **Body** is articulated with the head of the Malleus; its *short leg* rests on the opening of the Mastoid Cells, and its *long leg* bends inward and downward to the Orbiculare.

OS ORBICULARE.

66 The Os **Orbiculare**, the smallest bone in the Body, being not larger than a small pin's head,

67 Is placed between the point of the long Leg of the Incus, and the head of the Stapes.

68 It is of a flattish circular form.

STAPES.

69 The **Stapes**, or *Stirrup*, is placed immediately behind the Os Orbiculare, and extends to the Fenestra Ovalis on the inner side of the Tympanum.

Answ.

70 It precisely resembles a stirrup, having a *small head*, which is fixed to the Os Orbiculare; *two legs* forming the arch, of which the *posterior* is longest, and which are grooved internally; and a *flat base*, whose edge is curved superiorly, straight inferiorly, and fixed in the Fenestra Ovalis.

71 A fine Membrane fills the space between the Legs;

72 It is fixed in the groove on their inner sides.

73 The *Stapedius* Muscle is attached to its head.

INNER SIDE OF THE TYMPANUM.

74 Toward the upper part of the inner side of the Tympanum is an oval hole, placed horizontally, called FENESTRA OVALIS.

75 The Basis of the Stapes is fixed in it.

76 The FENESTRA ROTUNDA is small, placed toward the lower part, and covered by a Membrane;

77 It is nearly circular.

78 Immediately over the Fenestra Rotunda is situated a rounded eminence, called the *Promontory*.

79 Immediately behind the Fenestra Ovalis, near the circumference of the Tympanum is a small projection, with an opening at its apex, called the *Pyramid:* it contains the Stapedius.

80 The course of the *Fallopian Aqueduct* is marked by a rising which passes first above the Fenestra Ovalis, then behind it and the Fenestra Rotunda.

81 On the inner side of the opening of the Mastoid Cells is a *protuberance*, which corresponds with a part of the Labyrinth, called the *External Semicircular Canal.*

LABYRINTH.

82 The LABYRINTH is *situated* within the substance of the Petrous Portion of the Temporal Bone.

83 It consists of several contorted Cavities, which communicate with each other, and are divided into three, viz. the *Vestibulum*, *Semicircular Canals*, and *Cochlea.*

84 These Cavities contain their Periosteum, a Pulpy Membrane, formed by the ramifications of the Por-

Answ.

tio Mollis of the seventh pair of Nerves, Blood Vessels, and a limpid Fluid.

VESTIBULUM.

85 The Vestibulum occupies the middle of the Labyrinth; the Cochlea being placed before, and the Semicircular Canals behind it.

86 It is of an oval figure, but irregular, having an *hemispherical* depression below, a *Semioval* depression above, and a groove-like *sulciform* depression behind, leading to the Aqueductus Vestibuli.

87 The *Fenestra Ovalis* opens into its external side.

88 On its *posterior side* there are *six* openings; *five* great openings belonging to the semicircular canals; and *one* very small of the Aqueduct of the Vestibulum.

89 On the *anterior* side there is only *one* opening, which leads to the external, or Vestibular Scala of the Cochlea.

90 The *Aqueductus Vestibuli* passes in a curved direction backward and inward;

91 It opens externally about half an inch behind the Meatus Internus, upon the posterior side of the Os Petrosum.

SEMICIRCULAR CANALS.

92 The Semicircular Canals are *situated* behind the Vestibulum.

93 They are *three* in number.

94 They are named, the *superior*, *posterior*, and *external*, or *horizontal.*

95 They terminate in the Vestibule by *five* openings only,

96 Because one end of the superior, and another of the posterior Canal meet, and form a common opening.

97 Each canal has one of its extremities of an elliptical form, and more expanded than the other, called, its *Ampulla.*

98 The *Ampullæ* of the superior and posterior Canals are at their separate openings.

99 The *Ampulla* of the external Canal is at its superior, or external opening.

COCHLEA.

Answ.

100 The **Cochlea** is situated immediately before the Vestibulum, with its base towards the Meatus Auditorius Internus.

101 It is a double *spiral*, *conical Canal*, resembling the shell of a snail internally.

102 This Canal performs two turns and a half.

103 It is divided into two by a Septum, partly bony and partly membranous; the bony part is called, *Lamina Spiralis;* the membranous part, *Zona Mollis:* the *Zona Mollis* proceeds from the edge of the Lamina Spiralis to the opposite side of the Canal.

104 The two Canals, resulting from this division, are called, the *Gyri*, or *Scalæ;*

105 One is situated externally, opens into the Vestibule, and is called, *Scala Vestibuli;* the other is situated internally, terminates at the Fenestra Rotunda, and is called *Scala Tympani.*

106 The two *Scalæ* communicate at the apex of the Cochlea.

107 They wind round a conical pillar called, *Modiolus.*

108 The apex of the *Modiolus* is surmounted by a small hollow cone, called, *Infundibulum*, whose basis is turned toward the apex of the Cochlea, called, *Cupola.*

109 *One edge* of the *Lamina Spiralis* is fixed to, and winds round the Modiolus;

110 Its *apex* is a hook-like point, called, *Hamulus;* it ends in the Infundibulum.

111 There are numerous small apertures on each side of the Lamina Spiralis and the Modiolus, which transmit the filaments of the Portio Mollis.

112 These ramify chiefly upon the Lamina Spiralis and Zona Mollis.

MEATUS AUDITORIUS INTERNUS.

113 The **Meatus Auditorius Internus** is *situated* on the posterior side of the Os Petrosum.

114 It is a short tubular Canal of some size, terminated by two *Fossulæ.*

115 One of them is the *superior*, and the other the *inferior* Fossula.

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116 They are separated from each other by a spine, or bony ridge.

117 The MEATUS INTERNUS contains the Portio Mollis, and Portio Dura of the seventh pair of Nerves, with a small artery.

118 From the upper part of the superior Fossula proceeds the *Aqueductus Fallopii;*

119 It passes outward through the upper part of the Os Petrosum, then bends downwards and backward, lying on the inner side of the Cavity of the Tympanum, behind and above the Fenestra Ovalis;

120 It terminates in the Foramen Stylo-Mastoideum;

121 It transmits the Portio Dura, or Facial Nerve, which

122 Is joined first by a twig of the Vidian Nerve through a Foramen on the upper and fore part of the Os Petrosum: then by the Chorda Tympani, from the Cavity of the Tympanum.

123 Just where it is about to turn downward over the inner side of the Tympanum, the Vidian Nerve joins it.

124 A little before it makes its exit by the Foramen Stylo Mastoideum, the Chorda Tympani meets it.

125 The *Chorda Tympani* proceeds through the Cavity of the Tympanum, between the handle of the Malleus and the long leg of the Incus, and passes through the Fissura Glasseri.

126 The *Portio Mollis*, entering by numerous small apertures, is spread out within the Labyrinth, in the form of a delicate pulpy Membrane, giving a lining to it in addition to the Periosteum.

USE OF THE PARTS OF THE EAR.

127 The *Pinna* collects the sonorous undulations of the air, and reflects them towards the *Meatus Auditorius Externus;*

128 This trumpet-like tube concentrates and conveys the sound to the *Membrana Tympani*, which

129 Transmits the Vibrations to the chain of Bones contained in the Cavity of the Tympanum.

130 The *Muscles* of the Malleus and Incus regulate the

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tension of the Membrana Tympani, *relaxing* it to moderate sounds, and *bracing* it to perceive faint ones.

131 The *Eustachian Tube* admits the free passage of air into and from the Cavity of the Tympanum, thus preserving a due balance with the external atmosphere, and enabling the Membrana Tympani to move in obedience to the slightest impressions.

132 The *Chain of Bones*, by their motions, multiply the vibrations they receive from the Membrana Tympani, and transmit them to the water contained in the Labyrinth:

133 This *Fluid*, being incompressible, faithfully transmits and conveys the undulations it receives, all over the Nervous Membrane which lines the Labyrinth.

134 The *Portio Mollis* of the seventh pair of Nerves, spread out in the form of a fine Membrane within the Labyrinth, is the part which perceives the impressions of sound and transmits them to the Sensorium.

SECTION XXXIII.

OF THE MOUTH, AND ORGAN OF TASTE.

1 The Mouth does not (anatomically speaking) mean merely the transverse opening bounded by the Lips, but the whole Cavity to which this leads, as well as the parts adjacent.

2 The superior and the inferior *Maxillary Bones*, *Ossa Palati*, and *Teeth*, form its bony parts.

3 The Mouth is divided into external and internal parts.

EXTERNAL PARTS OF THE MOUTH.

4 The *two Lips*, and the *Cheeks*, form the external parts of the Mouth.

5 They consist of Muscles, covered externally by the common Integuments and Fat, and lined internally

Answ.

by a Vascular Membrane, which covers numerous mucous Glands.

6 The *red edges* of the Lips are turned towards each other, highly vascular and sensible, being supplied with numerous Villi.

7 The *Corners*, or *Commissures*, are formed by their union.

8 The *Fossula* of the upper lip is a groove extending from the Septum Narium, and in some is double.

9 The *Fræna*, one for the upper and one for the lower Lip, are folds of the internal Membrane which fix the Lips to the Jaws, opposite the Incisor Teeth.

INTERNAL PARTS OF THE MOUTH.

10 The Internal Parts of the Mouth are the *Gums*, the *Palate*, the *Tongue*, the *Amygdalæ*, and the *Salival Glands* and *Ducts*.

GUMS.

11 The Gums cover both the sides of the Alveolar processes, and surround the necks of all the Teeth.

12 They are composed of a firm, spongy, elastic, and very vascular substance,

13 Firmly adhering, by means of the Periosteum, to the Alveolar processes.

14 They are covered by a fine Membrane, which is a continuation of that which lines the Lips and Cheeks.

PALATE.

15 The Palate is surrounded by the Teeth of the upper Jaw, and extends to the great opening of the Pharynx.

16 It resembles an arch.

17 It is distinguished into the *hard* and *soft* Palate.

18 The *hard Palate* is the most anterior, and is composed of the Palatine processes of the upper Jaw, and Ossa Palati.

Answ.

19 The Membrane which covers it resembles that which lines the superior and middle parts of the Pharynx, studded with small Glands.

20 The *soft Palate*, or *Velum Palati*, is formed by a continuation of that Membrane which lines the hard Palate and the Cavity of the Nose, and by various muscles lying in this duplicature.

21 It resembles an arch, placed transversely above the root of the Tongue, and forming anteriorly one continued surface with the hard Palate.

22 From the middle of this Arch hangs the *Uvula.*

23 It is a conical Body.

24 Formed by a small Muscle enveloped in the glandular Membrane, which lines all these parts.

25 From the *Uvula* proceed two folds downward and to each side, called the *Arches of the Palate*, so that the arch is on each side double.

26 The *anterior arch* runs towards the side of the basis of the Tongue; and the *posterior* towards the side of the *Pharynx.*

27 Between the anterior and posterior arch of the Palate, on each side an irregular glandular body is placed, called the *Tonsil*, or *Amygdal Gland.*

TONGUE.

28 The Tongue is *divided* into a *basis*, and *apex;* a *superior* and *inferior side*, and *two edges.*

29 It chiefly consists of soft muscular fibres, intermixed with a medullary, or fatty substance.

30 Its *upper side* consists of a thick Membrane, studded all over with small eminences, and covered by a continuation of the Cuticle; it is likewise continued over the lower side, but here it is smooth, forming only a fold in the middle, called *Frænum.*

31 The small eminences of its superior surface are called *Papillæ.*

32 There are three kinds, distinguished by the variety in their figure.

33 The *Papillæ Capitatæ* are situated on the basis of the Tongue, in small Fossulæ.

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34 They resemble in miniature a mushroom, having a narrow neck, and being depressed in the middle:

35 They secrete a salival, or mucilaginous fluid.

36 The Papillæ *Semilenticulares* are placed chiefly in the middle and anterior parts of the Tongue.

37 They are slightly convex and cylindrical, and next in size to the Capitatæ.

38 The *Papillæ Velosæ* occupy the whole surface of the upper side of the Tongue, and even the interstices of the other Papillæ;

39 They are of a conical form, and the smallest Papillæ of the Tongue.

SALIVAL GLANDS.

40 Three glandular bodies, situated on each side of the face, secrete the Spittle, or Saliva; namely, the *Parotid*, the *Sub-maxillary*, and the *Sublingual* Glands.

41 Numerous minute Glands, distributed under the Membrane lining all the parts of the Mouth, contribute to increase the fluids of the Mouth, these are named from the parts on which they are situated, viz.

The *Labial*, on the inside of the Lips;
The *Palatine*, on the Palate;
The *Lingual*, on the Tongue;
The *Buccal*, on the inside of the Cheeks, &c. &c.

PAROTID GLANDS.

42 The **Parotid** is the largest of the lateral Glands, it is situated between the external Ear and the Ramus, and angle of the lower Jaw, extending over some part of the Masseter.

43 Its Excretory Duct, called **Steno's** *Duct*, arises from several lesser ducts at its anterior and upper part.

44 It passes obliquely over the outside of the Masseter.

45 It perforates the Cheek, and opens into the Mouth, opposite the Interstice, between the second and third Molar Teeth.

SUB-MAXILLARY GLANDS.

Answ.

46 The **Sub-maxillary Gland** is situated on the inside of the angle of the lower Jaw, near the internal Pterygoid Muscle.

47 Its *Excretory Duct*, or *Wharton's Duct*, proceeds from that side of the gland which is turned tō the Hyoglossus.

48 It advances between the Genio-Glossus and Mylo-Hyoideus, under the Sublingual Gland.

49 It opens on one side the Frænum of the Tongue.

SUBLINGUAL GLANDS.

50 The **Sublingual Gland**, the smallest, is situated under the anterior portion of the Tongue, between the Genio-Glossus and Mylo-Hyoideus.

51 It has several small ducts, which open close under the side of the Tongue, near the Gums, a little further back than the Frænum.

AMYGDALÆ.

52 The **Amygdal Gland**, or *Tonsil*, is situated in the interstice between the arches of the Palate on each side.

53 It somewhat resembles the outside of an almond shell, being uneven and covered with several Foramina.

54 It is filled with numerous and large *Follicles*.

55 They secrete a viscid fluid.

THYROID GLAND.

56 The **Thyroid Gland** is situated on the anterior and inferior part of the Neck: its middle portion lies on the Crico-Thyroidei, and its lateral portions on the Thyro-Hyoidei Muscles.

Answ.

57 It seems to be composed of two oblong portions, united by their inferior extremities, so as to have some resemblance to a crescent.

58 Its *use*, though not understood, appears to be connected with those of the Mouth.

SECTION XXXIV.

OF THE SKIN, AND OF THE ORGAN OF TOUCH.

1 The Skin, or *Common Integument*, consists of three parts, namely, the *Cuticle*, *Rete Mucosum*, and *Cutis*, having in most parts the *Adipose Substance* situated under them.

2 The *Cuticle* is the most external, immediately under it lies the *Rete Mucosum*, covering the *Cutis*, which is the most internal, and by much the most thick.

CUTIS.

3 The Cutis consists of a close intertexture of fibres, plentifully supplied with bloodvessels and nerves.

4 It is thickest on the palms of the hands and soles of the feet.

5 The Papillæ are numerous small eminences on its external surface, in which the Capillary Filaments of the Cutaneous Nerves terminate in radiated Pencils.

6 They are most prominent on the palms of the hands and soles of the feet, and on the fingers and toes.

7 They are arranged in double rows, which are regularly placed as parallel, crooked, waving, or spiral lines.

8 On the red part of the Lips they resemble fine Hairs, or Villi.

9 The *Papillæ* are the parts in which the Sense of Touch resides; it is more particularly acute at the ends of the fingers, where the regular concentric rows of the Papillæ are remarkable.

Answ.

10 Numerous *Sebaceous Follicles* exist in the substance of the Skin, and open on its surface.

11 They are most conspicuous about the Nose, Cheeks, Ears, Armpits, Groins, and Genitals.

12 They secrete an unctuous fluid which protects the Skin from the effects of heat and friction.

13 Besides the apertures of the Sebaceous Follicles, there are noticed, openings for the *Hairs*, and others very minute, called *Pores*, which are the terminations of the exhalent vessels.

RETE MUCOSUM.

14 The **Rete Mucosum** is a delicate substance situated every where between the *Cuticle* and *Cutis*, surrounding the Papillæ of the *Cutis*, and lying in the interstices between them.

15 It is white in the Europeans and northern Asiatics; but black, or of a dark brown, in the Indians, Africans, and Americans, so that it is the seat of colour.

CUTICLE.

16 The **Cuticle** is a delicate transparent Membrane, covering the *Rete Mucosum* and *Cutis*.

17 It is thickest in the palms of the hand and soles of the feet.

18 It dips in betwixt every minute fold of the *Cutis*, and into every aperture on its surface.

19 It does not appear to be organized, nor does it possess any sensibility.

ADIPOSE SUBSTANCE.

20 The **Adipose Substance** occupies the Cellular Membrane in various parts of the body, but a layer of it is uniformly found closely adhering to the *Cutis*, in most parts, and on this account it has been by many considered as part of the common covering.

Answ.

21 The Skin of the Eyelids, Penis, and Scrotum, are wholly free from it.

22 It consists of an Oleaginous Fluid, contained in distinct cells, which do not appear to have any communication with each other.

23 This is most remarkable under the Skin, where it puts on a granulated appearance.

24 It serves as a reservoir of nourishment, fills interstices, guards against pressure, and lessens the specific gravity of the body.

NAILS.

25 The Nails are considered as a continuation of the Cuticle.

26 They appear as if implanted under a fold of the Cutis,

27 And adhere to a similar doubling of the Cuticle.

28 They resemble horn in their structure.

29 They grow from the surface of the true skin, on which they lie, and their fibres shoot forward from their roots.

HAIRS.

30 The Hairs grow from roots, called *Bulbs*, which are situated in the Cutis.

31 The *Bulbs* are small pulpy bodies, invested by a Membrane.

32 From the Bulbs the *Hairs* proceed betwixt the Papillæ, and pierce the Cuticle.

33 Each Hair appears to be a bundle of minute filaments, covered by a membrane.

SECTION XXXV.

OF THE BRAIN IN GENERAL, AND OF ITS MEMBRANES.

1 The Brain is all that pulpy mass, which, with the Membranes that invest it, fills the Cavity of the Cranium.

Answ.

2 It is *divided* into the *Cerebrum* and *Cerebellum.*

3 It is enveloped by three Membranes, namely, the *Dura Mater*, *Tunica Arachnoides*, and *Pia Mater.*

DURA MATER.

4 The DURA MATER is the most external, and by far the most dense, of the three Membranes; it lines the inside of the Cranium, to which it firmly adheres, and separates and supports the various portions of the Brain by means of Duplicatures, or processes.

5 It consists of two Laminæ.

6 The *External Layer* adheres every where to the internal surface of the Cranium, but most firmly at the Sutures.

7 The *Internal Layer* forms a smooth, polished, and lubricated surface.

8 Large duplicatures of the internal Lamina form the processes of the *Dura Mater.*

9 These are the *Falx Cerebri*, the *Tentorium*, the *Falx Cerebelli*, and the *Sphænoidal Folds.*

10 The two Laminæ firmly adhere to each other, excepting opposite the duplicatures of the internal one, where triangular channels are formed, called, the *Sinuses* of the Dura Mater: these are the venous reservoirs of the Brain.

FALX.

11 The FALX CEREBRI forms a partition along the upper and middle part of the Cavity of the Cranium, extending from the edge of the Crista Galli, along the Sagittal Suture, to the middle of the Tentorium.

12 Its *shape* is that of half a crescent; the broadest part, or basis of which, is turned backwards, and joins the Tentorium.

13 It passes between the hemispheres of the Cerebrum, so that it supports either in the various positions of the head.

TENTORIUM.

Answ.

14 The **Tentorium** is stretched across the posterior part of the Cavity, being fixed to the Os Occipitis, along the grooves of the lateral Sinuses, and to the angles of the Ossa Petrosa, as far as the posterior Clynoid process of the Os Sphœnoides.

15 It is broadest at its middle, where it is united to the Falx Cerebri.

16 It separates the Cerebrum from the Cerebellum, and supports the posterior lobes of the former.

17 At its anterior part there is an *oval notch*, through which pass the parts which unite the Cerebrum and Cerebellum.

FALX CEREBELLI.

18 The **Falx Cerebelli** descends from the middle of the Tentorium, along the inner spine of the Os Occipitis to the Foramen Magnum.

19 It is placed between the Hemispheres of the Cerebellum.

SPHŒNOIDAL FOLDS.

20 There are two *lateral folds*, one on each side of the Sella Turcica, joining the anterior and posterior Clynoid processes; also two *anterior folds* at the edges of the Sphœnoidal Fissures.

21 The *lateral ones* form the Fossula for the Pituitary Gland, and the *anterior ones* divide the anterior from the middle lobes of the Cerebrum.

ELONGATIONS OF THE DURA MATER.

22 They are productions of both its Laminæ, which pass out of the Cranium by various apertures.

23 The most important passes through the great Fora-

Answ.

men, and lines the great Canal of the Vertebræ; the others pass out along with the Cerebral Nerves.

*SINUSES OF THE DURA MATER.**

24 The Sinuses of the Dura Mater have been noticed as triangular canals, or venous reservoirs, placed in the substance of that membrane, and

25 *Formed* by the separation of its two layers.

26 The Great Sinuses are *the superior longitudinal* in the convex edge of the Falx Cerebri, terminating in the two *lateral Sinuses*, which are situated in the convex edge of the Tentorium; the *Torcular Herŏphili*, formed between the basis of the Falx Cerebri and the middle of the Tentorium. The lesser Sinuses are, *the inferior longitudinal*, the *occipital*, the *superior* and the *inferior petrosal*, the *cavernous*, and the *circular* around the Sella Turcica.

ARTERIES AND NERVES OF THE DURA MATER.

27 The Arteries of the Dura Mater are distinguished into *anterior*, *middle*, and *posterior*.

28 The *anterior* come from those of the Orbit.

29 The middle artery, or the *Arteria Meningea Media*, is a branch of the External Carotid.

30 The *posterior* come from the Vertebral Arteries.

31 It receives its *Nerves* from the trunk of the *fifth pair*, at its entry into the Cavernous Sinus; and from the *eighth pair*, as it passes out of the Cranium.

PIA MATER.

32 The Pia Mater surrounds, and closely invests, the whole mass of the Brain.

33 It consists of two very fine Laminæ.

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* The Sinuses of the Dura Mater are described in their proper place, along with the other Veins.

Answ.

34 The external is called, the *Tunica Arachnoides*, a delicate transparent membrane;

35 It is spread uniformly over all its convex surface; whilst

36 The *Internal Layer*, to which the name of Pia Mater is now confined, forms numerous Plicæ, Duplicatures, and Septa, which pass every where between the folds of the Cerebrum and Cerebellum.

37 This internal Layer is highly vascular, allowing the vessels of the Brain to ramify in it before they enter that substance.

SECTION XXXVI.

OF THE CEREBRUM.

1 The **Cerebrum** occupies the greater, or superior, division of the Cavity; above the Tentorium, resting also on the anterior and middle parts of the Basis Cranii.

2 It is somewhat of an oval form, convex above, flat below.

3 It is *divided* above into two lateral portions, called *Hemispheres*, between which the Falx Cerebri is placed; and below it is divided into two anterior, two middle, and *two posterior Lobes*, by transverse depressions.

4 the *anterior Lobes* are situated in the anterior Fossæ of the Basis Cranii.

5 The *middle Lobes* in the middle Fossæ of the Basis Cranii.

6 The *posterior Lobes* on the Tentorium.

7 The fissure between the anterior and middle Lobes, is called, the *Fissura Magna Silvii:*

8 The external surface of the Cerebrum every where consists of tortuous eminences, resembling the windings of the Intestines, these are called its *Convolutions.*

9 Grooves separate them, which, though apparently shallow, penetrate deeply into the substance of the

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Brain; into these pass the duplicatures of the Pia Mater, they are called, the *Anfractuosities* of the Brain.

10 The Cerebrum consists of two kinds of substance, an external, called, the *Cortical*, or *Cineritious;* and an internal, called, the *Medullary*.

11 The *Cortical Substance* is of a reddish ash colour, it forms the circumvolutions, and dips down into the Anfractuosities.

12 The *Medullary Substance* is of a milk white hue;

13 It constitutes the internal mass of the Brain.

CORPUS CALLOSUM.

14 The Corpus Callosum is an oblong white body, situated at the bottom of the Fissure, which divides the two hemispheres.

15 It is covered by the Pia Mater.

16 Along its middle runs a groove, called, the *Rapha*, bounded on each side by a small Medullary Chord.

17 Its edges blend with the Medullary Substance of the two Hemispheres.

18 By cutting off the Hemispheres of the Cerebrum, nearly even with the Corpus Callosum, there is seen a large oval mass of Medullary Substance, called, the *Centrum Ovale*, of which the Corpus Callosum forms the middle part, and the sides are called, the *Medullary Arches.*

LATERAL VENTRICLES.

19 The Lateral Ventricles are two Cavities, situated under the Corpus Callosum, and Medullary Arches of the Cerebrum.

20 The general course of these Cavities would be represented by the letter *X*, or two C.s turned back to back; they are broad and round at their anterior and superior extremities; they then extend *backward*, gradually separating from each other and contracting; they then bend *downward*, (after having sent backward a triangular pointed Cavity, which slight-

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ly turns inward, called, *Cavitas Digitalis*, or *Posterior Horn*,) they lastly turn *forward*, and terminate under their superior extremities, only more backward and outward.

21 At the part where they are nearest to each other, which is just under the Corpus Callosum, there is a delicate partition interposed between them, called, the *Septum Lucidum*. The parts noticed in the lateral Ventricles are, the *Septum Lucidum*, the *Fornix*, the *Plexus Choroides*, the *Corpora Striata*, the *Thalami Nervorum Opticorum*, and the *Pineal Gland*.

22 The SEPTUM LUCIDUM is united to the Corpus Callosum, directly under the Rapha, and to the Fornix inferiorly.

23 It consists of two Laminæ.

24 Between these there is a small Cavity, which by some has been called, the *fifth Ventricle*.

FORNIX.

25 The FORNIX is a medullary body, *situated* immediately under the Septum Lucidum.

26 It is of a triangular figure, one of its edges being posterior, and two lateral.

27 It is connected by its superior surface to the Septúm Lucidum, and by its posterior edge to the Corpus Callosum, of which it is a continuation.

28 The continuations of its angles are called, *Pillars*, or *Crura*.

29 The *posterior pillar* on each side follows the course of the Ventricles backwards and downwards, in the form of a thin medullary edge, called *Corpus Fimbriatum*.

30 The *anterior Pillar* is double, it dips down at the fore part of the Ventricle.

31 Its inferior surface rests on the Thalami Nervorum Opticorum, and is covered by transverse prominent Medullary lines.

32 This appearance has been called, *Lyra*.

CHOROID PLEXUS.

Answ.

33 The Plexus Choroides are two membranous loose bodies, of a red and reticular or plexiform appearance.

34 They begin small under the anterior part of the Fornix, where they are united; as they pass backwards they increase and extend themselves throughout the whole course of these Ventricles.

35 They are continuations of the Pia Mater, highly vascular, and containing several Tubercles like Glands, and often little Hydatids.

36 When the Fornix and Choroid Plexus have been removed, the eminences of the Lateral Ventricles are conspicuous, viz. the *Corpora Striata*, and the *Thalami Nervorum Opticorum.*

CORPORA STRIATA.

37 The Corpora Striata are placed at the bottom of the anterior and outer part of the Lateral Ventricles.

38 They are pyriform.

39 Their *anterior large extremities* are separated from each other only by the Septum Lucidum, but posteriorly they are at a much greater distance.

40 As their name indicates, they are composed of alternate Striæ of the Medullary and Cortical Substances.

THALAMI NERVORUM OPTICORUM.

41 The Thalami Nervorum Opticorum are situated between the posterior extremities of the Corpora Striata.

42 They are convex superiorly, and of an oval shape; but their *internal sides* are flat, smooth, and in contact.

43 The *Commissura Mollis*, a short chord of soft substance, joins them at the middle and anterior part of their internal sides.

Answ.

44 The *Tenia Semicircularis* is a white, prominent line lodged in the groove formed between the Corpus Striatum and Thalamus, on each side.

45 Their external surface is white, but internally they are composed of medullary and cineritious substance.

PEDES HYPPOCAMPI.

46 The Pedes Hyppocampi, or *Cornua Ammonis*, are two medullary protuberances of a semicylindrical form,

47 *Situated* in the posterior contorted part of the Lateral Ventricles.

48 They describe a *curve*, whose convexity is directed outwards, following the course of the Ventricles.

49 Their *terminations* at the extremity of the Ventricles are rounded, and present two or three little smooth tubercles.

50 The *Corpora Fimbriata* run along their internal concave edges.

51 They are *composed* of medullary substance externally, and of cortical substance internally.

HYPPOCAMPUS MINOR.

52 The Hyppocampus Minor, or *Ergo*, is an oblong medullary protuberance, *situated* in the Cavitas Digitalis, or posterior horn of each Ventricle.

53 It is of the same *form*, and takes the same course as the Cavity.

54 It is connected with the posterior pillar of the Fornix, from which it seems to proceed.

PINEAL GLAND.

55 The Pineal Gland is situated behind the Thalami Nervorum Opticorum, and above the Tubercula Quadrigemina, under the posterior part of the Fornix.

Answ.

66 It is irregularly round, and sometimes of a *conical form.*

57 It is connected to the lower part of the Thalami by two medullary Peduncles.

58 It consists mostly of cortical substance, and generally contains a gritty matter.

59 Its base is connected with the *posterior Commissure of the Cerebrum,* which is

60 A transverse medullary Chord towards the posterior part of the third Ventricle.

TUBERCULA QUADRIGEMINA.

61 The **Tubercula Quadrigemina,** are two pairs of medullary eminences, situated behind the Thalami Nervorum Opticorum, and under the Pineal Gland.

62 Each is transversely oblong, the superior, called *Nates,* being a little more rounded and broader than the inferior, called *Testes.*

63 Their surface is Medullary, their inner substance Cineritious.

APERTURES IN THE LATERAL VENTRICLES.

64 The **Foramen** of **Monro** is an aperture of communication between the two lateral Ventricles;

65 It is *situated* just behind the anterior pillars of the Fornix, and over the fore part of the third Ventricle.

66 The **Foramen Commune Anterius,** or *Vulva,* is an opening of communication with the third Ventricle;

67 It is *situated* before the Thalami, behind the anterior Commissure, and just under the Foramen of Monro.

68 The **Foramen Commune Posterius,** or *Anus,* is stopped by the Choroid Plexus, when the parts are in their natural situations;

69 It is *situated* before the posterior Commissure, and behind the Thalami.

THIRD VENTRICLE.

Answ.

70 The **Third Ventricle** is the space between the Thalami Nervorum Opticorum.

71 At its fore part it extends downwards under the anterior Commissure, and terminates in the *Infundibulum*,

72 A funnel-like membranous Tube, which leads to the Pituitary Gland.

73 From its posterior part proceeds the *Iter-a-tertio-ad-quartum Ventriculum.*

74 This passes under the Tubercula Quadrigemina, and terminates in the fourth Ventricle.

PITUITARY GLAND.

75 The **Pituitary Gland** is situated in the Sella Turcica.

76 It is transversely oval, and is sometimes, on the lower part, divided into two lobes by a small notch.

77 It seems to be of peculiar substance, neither cerebral nor glandular.

SECTION XXXVII.

OF THE CEREBELLUM.

1 The **Cerebellum** is *situated* in the inferior Cavity of the Cranium, under the Tentorium.

2 It is broader laterally than before or behind, and flatted superiorly.

3 It is *divided* into two Lobes posteriorly by the Falx Cerebelli.

4 It has no convolutions, but on its surface are deep concentric *Sulci*, or *Grooves.*

5 Like the Cerebrum, it consists of *two substances*, the Cortical and Medullary.

6 By cutting the Cerebellum vertically from above downward, the arrangement of the two substances may be shown; the medullary appearing within the

Answ.

Cortical like a tree with numerous branches, hence called, *Arbor Vitæ.*

7 The *Appendices Vermiformes* are two worm-like eminences;

8 One is situated at the anterior and superior part, the other at the posterior and inferior part of the Cerebellum.

FOURTH VENTRICLE.

9 The **Fourth Ventricle** runs backward and downward along the middle of the Cerebellum.

10 The Iter-a-tertio-ad-quartum Ventriculum opens into it anteriorly.

11 The *Valvula Vicusensii* is situated at the beginning of the fourth Ventricle, immediately behind the Iter-a-tertio-ad-quartum Ventriculum.

12 The posterior termination is called, *Calamus Scriptorius.*

13 The *Crura Cerebelli* proceed from the inferior and anterior part of the Cerebellum.

SECTION XXXVIII.

OF THE MEDULLA OBLONGATA.

1 The **Medulla Oblongata** is a large medullary body situated in the middle of the basis of the Cerebrum and Cerebellum.

2 It is formed by the union of the Crura of the Cerebrum and Cerebellum.

3 The *Crura Cerebri* and *Cerebelli*, are the continuations of the Medullary Substance of those parts which unite at the *Pons Varolii.*

4 The Medulla Oblongata terminates posteriorly in the Medulla Spinalis which passes down the Vertebral Canal.

PONS VAROLII.

5 The **Pons Varolii** is placed across the union of the Crura Cerebri and Cerebelli.

6 It is a transverse semi-annular protuberance.

Answ.

7 Its surface is streaked transversely, and divided into lateral parts by a longitudinal depression.

CORPORA OLIVARIA AND CORPORA PYRAMIDALIA:

8 From the Pons Varolii the Medulla Oblongata descends, becomes conical, and has four longitudinal eminences on its inferior surface, called, the *Corpora Pyramidalia*, and *Corpora Olivaria*.

9 The Corpora Pyramidalia are placed in the middle, in a longitudinal direction, behind the Pons Varolii.

10 The Corpora Olivaria are situated on the outside of the Corpora Pyramidalia.

CORPORA MAMMILLARIA.

11 The Corpora Mammillaria are two small round medullary bodies, *situated* very near the Infundibulum.

12 They are placed immediately under the basis of the anterior pillars of the Fornix.

SECTION XXXIX.

OF THE MEDULLA SPINALIS.

1 The Medulla Spinalis proceeds from the extremity of the Medulla Oblongata.

2 It is lodged in the Canal of the Vertebræ.

3 It is invested by a continuation of the Membranes of the Brain.

4 It is somewhat flattened anteriorly and posteriorly, and a groove runs along these surfaces.

5 Like the Cerebrum and Cerebellum, it consists of a *Cortical* and *Medullary Substance*.

6 It terminates pointed, at the Os Sacrum; towards its end it consists of bundles of nervous filaments, which has occasioned it to be called, *Cauda Æguina*.

ANGIOLOGY.

SECTION XL.

OF THE ARTERIES IN GENERAL.

Answ.

1 The Arteries are those Blood Vessels which convey the Blood from the Heart to all the parts of the Body.

2 They are distinguished from Veins by being whiter, more dense, firmer and more elastic; when cut across presenting a gaping aperture; and, in the living subject, by their pulsatory motion.

3 They begin at the Heart by *two trunks* of equal size, viz. the *Pulmonary Artery*, from the left Ventricle distributed to the Lungs only; and the *Aorta* from the right Ventricle, whose branches pervade every part of the body.

4 The Branches almost always form very obtuse angles with the trunks above; but less so in proportion to their nearness to the Heart.

5 The ultimate branches terminate in *five* different ways, 1st. in *Veins* by mere continuity of canal: 2dly. as *Exhalents* on the Skin, and in the various internal Cavities: 3dly. in *Glands*, secreting the various fluids :4thly. in *Cellular Bodies*, as in the Penis and Spleen: 5thly. by *Anastomosis*, or branches of mutual communication between the Arteries.

6 They are composed of *three coats*, viz. A *Cellular*, or *external Coat;* an *Elastic*, or *Nervous Coat;* a *muscular Coat;* and a *Cuticular*, or *internal Coat.* They are nourished by vessels, called *Vasa Vasorum.*

OF THE PULMONARY ARTERY.

7 The Pulmonary Artery arises from the right Ventricle,

8 Ascends towards the left, passing before the beginning of the Aorta;

9 It *divides* into *two*, viz. the *right* and *left Pulmonary Arteries;*

10 These ramify throughout the Lungs.

Answ.

11 The *right Pulmonary Artery* passes behind the Aorta and Superior Cava.

12 It is the longest.

13 They terminate in minute ramifications which form upon the surfaces of the air cells, the *Rete Mirabile Malpighii.*

OF THE AORTA.

14 The Aorta arises from the superior part of the left Ventricle,

15 Opposite the fourth Dorsal Vertebra.

16 It ascends obliquely towards the right, it then forms a curve backwards and to the left, ascending as high as the second Dorsal Vertebra: whence it passes downwards and backwards to the left side of the body of the third Dorsal Vertebra, and continues its course along the bodies of the Vertebræ as far as the Os Sacrum, lying a little to the left.

17 It is generally divided into the *ascending* and *descending Aorta;* and the descending is further divided into the *superior* and *inferior*, or *Thoracic* and *Abdominal Portions.*

18 The head and upper extremities are supplied from the ascending Aorta, the Trunk and lower extremities from the descending.

19 The great Branches of the Aorta are the two *Subclavian Arteries*, the *Carotids*, the *Cæliac*, the *superior Mesenteric*, the *Emulgent*, the *inferior Mesenteric*, and the *Iliac* Arteries.

20 The lesser branches are, the *Coronary*, *Bronchial*, *Œsophageal*, *Intercostal*, *inferior Diaphragmatic*, *Spermatic*, *Lumbar* and *Sacral* Arteries.

21 They all arise in pairs except the *Cæliac*, the *two Mesenteric*, some of the *Œsophageal*, the *Bronchial*, and sometimes the *Sacral.*

22 The first pair of Arteries are the *Coronary.*

23 *Three* Arteries are given off from the arch of the Aorta, viz. the *Arteria Innominata*, or common trunk of the *right carotid* and *right Subclavian;* the *left Carotid* and the *left Subclavian.*

24 The *Carotids* run up directly to the Head,

Answ.

25 Each divides into an *external* and *internal Carotid.*

26 The *External Carotids* are distributed to the Face and external parts of the Head.

27 The *internal Carotids* to the Brain.

28 The *Subclavian Arteries* pass behind and under the Clavicles to the upper Extremity:

29 They terminate at the upper edge of the first Rib.

30 They then take the name of *Axillary Arteries.*

31 The *Thoracic Portion* of the descending Aorta gives off the *Bronchial*, *Œsophageal*, and *Intercostal* Arteries.

32 The *Abdominal Portion* gives off the *Phrenic*, *Cæliac*, *Superior Mesenteric*, *Emulgent*, *Spermatic*, *Inferior Mesenteric*, *Lumbar*, *Sacral*, and *Iliac Arteries.*

33 The *Phrenic* go to the Diaphragm.

34 The *Cæliac* goes to the Stomach, Spleen, and Liver.

35 The *Superior Mesenteric* goes to the Mesentery, small Intestines, &c.

36 The *Emulgent* go to the Kidneys.

37 The *Spermatic* to the *Testes.*

38 The *Inferior Mesenteric* goes to the great Intestines.

39 The *Lumbar* go to the Loins.

40 The *Sacral* to the Sacrum.

41 The AORTA terminates in the two *Iliac Arteries*, which pass

42 To the Pelvis and lower extremities.

43 They divide into the *external* and *internal* Iliacs.

44 The *Internal Iliacs* go to the Pelvis.

45 The *External Iliacs* pass to the Thighs and lower extremities,

46 They terminate under Fallopius's Ligament.

47 The continuations of the External Iliacs on the lower extremities are called, the *Femoral Arteries.*

SECTION XLI.

OF THE ARTERIES OF THE HEART.

1 The two Arteries of the Heart are called, *Coronary;* there is a *right* and a *left* Coronary Artery.

2 They rise immediately above the Semilunar Valves.

Answ.

3 The *right Coronary Artery* passes in the grove between the right Auricle and Ventricle, round the right edge of the Heart to its inferior flat surface; along the middle of which it runs to the Apex.

4 The *left Coronary Artery* is smaller, it passes between the Pulmonary Artery and left Auricle, and then divides into two or three branches: *one* runs along the middle of the upper surface, *another* passes round the basis of the flat side, and a *third* often goes to the Septum Ventriculorum.

SECTION XLII.

OF THE ARTERIES OF THE HEAD.

1 The TWO CAROTID ARTERIES supply the Head.

2 The *right* arises from the Arteria Innominata, and the *left* is the next capital branch given off by the Aorta.

3 They ascend on each side of the Trachea, between it and the internal Jugular Vein, as high as the Larynx, without giving off any branches, and in this course are called, the *Primitive Carotids.*

4 Opposite the Os Hyoides they divide into the *external* and *internal Carotid.*

5 The external is situated before and to the inside of the internal, at their origin.

EXTERNAL CAROTID ARTERY.

6 The EXTERNAL CAROTID ascends behind the angle of the lower Jaw, passes under the Parotid Gland, and terminates opposite the Condyle of the lower Jaw.

7 It gives off *nine* Branches.

8 They are anteriorly the *Superior Thyroideal*, the *Lingual*, the *External Maxillary*, or *Labial*, and the *transverse Facial;* posteriorly the *Occipital*, the *posterior Oris;* interiorly the *ascending Pharyngeal;* and lastly, it divides into the *Temporal*, and the *Internal Maxillary.*

9 The SUPERIOR THYROIDEAL arises from the inner side of the External Carotid, near its origin.

Answ.

10 Immediately after its origin it bends downwards, and gives branches to the Jugular Glands, the fat and skin; then runs transversely, and is distributed to the Thyroid Gland and Larynx, as well as slightly to the Pharnyx.

11 The LINGUAL is the second branch from the Trunk of the External Carotid.

12 It passes over the Cornu of the Os Hyoides to the Muscles of that Bone and of the Tongue, and to the Sublingual Gland, then loses itself in the Tongue, where it has been called, the *Raninal* Artery.

13 The EXTERNAL MAXILLARY, or *Labial*, is the third branch from the Trunk of the External Carotid, and arises anteriorly.

14 It passes anteriorly over and just before the Masseter, and middle of the lower Jaw; it then runs under the Depressor Anguli Oris, supplying it, the Buccinator, and the Quadratus. It sends off *first*, the *Submental* below the Chin; next a contorted branch, which, dividing at the Commissure of the Lips, runs along their edges and forms, with its fellow, the *Coronaria Labiorum*. It then ascends towards the Nose, and is distributed about it; it afterwards reaches the inner angle of the Palpebræ and disperses several branches.

15 The ASCENDING PHARYNGEAL is the fourth branch from the External Carotid, arising from its inner side.

16 It is of small size, and ascends upon the Rectus Anticus to the Pharnyx; some of its branches enter the Cranium.

17 The OCCIPITAL is the fifth branch from the Trunk of the External Carotid, and arises posteriorly.

18 It passes obliquely before the Internal Jugular Vein, and giving twigs to the Stylo-Hyoideus, Stylo-Glossus, and Digastric; it runs between the Styloid and Mastoid Processes, supplying the Muscles and Integuments of the Os Occipitis; it communicates posteriorly with the Vertebral and Cervical, and superiorly with the Temporal Artery.

19 The POSTERIOR AURIS is the sixth branch from the

Answ.

Trunk of the External Carotid, and arises posteriorly.

20 It is distributed to the exernal Ear.

21 The TRANSVERSE FACIAL is the seventh branch from the External Carotid, it arises anteriorly.

22 It is small, passes across before the Masseter Muscle, and is distributed to it and to the fat of the Cheek.

23 The TEMPORAL is the eighth branch which arises from the Trunk of the External Carotid.

24 It emerges from the Parotid Gland, ascends over the Zygoma, and divides into an Anterior, Middle, and Posterior branch. The *Anterior*, or *Frontal* branch, supplies the Forehead; the *Middle*, or *Parietal* branch, partly to the Forehead and partly to the Occiput; and the *Posterior*, or *Occipital* branch, to the Occiput.

25 THE INTERNAL MAXILLARY commences from the termination of the External Carotid;

26 Just below the Cervix of the lower Jaw it bends inward, forward and downward, and then ascends forward to the Sphœno-Maxillary Fissure, giving off

1st. The *Arteria Meningea Media*, which passes through the Foramen Spinosum of the Os Sphœnoides to the Dura Mater.

2dly. The *Inferior Maxillary*, which enters the Canal of the lower Jaw, and goes to the Teeth and Chin.

3dly. The *Alveolar*, to the back Teeth of the upper Jaw.

4thly. The *Infra-Orbitar*, which passes along the Infra-Orbitary Canal to the Cheek.

5thly. The *Palato-Maxillary*, which descends in the Canal of the same name to the Palate.

6thly. The *Sphæno-Palatine*, to the Cavity of the Nose.

Lastly. Various branches to the adjacent parts, from which they have received names.

INTERNAL CAROTID ARTERY.

27 The INTERNAL CAROTID at first forms a curve backward, and is situated more posteriorly than the external: it ascends to the Petrous Portion of the

Answ.

Temporal Bone, passes through its canal into the Cavernous Sinus; it there forms another considerable curve by the side of the Sella Turcica, and by the side of the anterior Clynoid Process it pierces the Dura Mater.

28 It sends one branch forward just as it pierces the Dura Mater, which accompanies the Optic Nerve through the Foramen Opticum, called the *Ophthalmic*, which is distributed to the contents of the Orbit. It then divides into *three* branches, 1st. The *Communicans*, which runs backwards to join the Vertebral. 2dly.

29 The ANTERIOR CEREBRI, which runs forward and unites wih its fellow from the other side, and then divides into two or three branches, which go to the anterior lobe of the Brain, to the Corpus Callosum, and to the middle lobe of the Brain. 3dly.

30 The MEDIA CEREBRI, larger than the former, divides into several Rami, which supply the superficial parts of the Brain above and below.*

SECTION XLIII.

ARTERIES OF THE UPPER EXTREMITIES.

SUBCLAVIAN ARTERIES.

1 There are two SUBCLAVIAN ARTERIES, one going to each Arm.

2 The RIGHT SUBCLAVIAN arises from the Arteria Innominata, the LEFT is the third branch which proceeds directly from the arch of the Aorta.

3 They pass transversely under the Clavicles, and over the first Rib.

4 Above the middle of the two first Ribs, between the anterior insertions of the Scaleni, they lose the name of Subclavian, and take that of Axillary Arteries.

5 The LEFT Subclavian is shorter, and takes a more oblique course than the right.

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* The Vertebral Arteries are described as Branches of the Subclavian.

Answ.

6 They run some way without giving off any branches; then each gives off *six*, viz. the *Vertebral*, the *Internal Mammary*, the *Cervical*, the *Intercostal*, the *Inferior Thyroideal*, and the *Supra-Scapular* Arteries.

7 The VERTEBRAL arises from the posterior and upper side of the Subclavian;

8 It ascends and enters the canal formed in the Transverse Cervical Processes, sending off twigs in its ascent to the Medulla Spinalis and its Membranes, and giving Arteries to the Vertebral Muscles; its course is very tortuous, especially before it enters the Cranium at the Foramen Magnum Occipitale. Before entering the Cranium it communicates with the Cervical and Occipital Arteries, and immediately after it enters it gives branches to the Medulla Oblongata Corpora Olivaria, &c. It then advances on the Basilary Process of the Os Occipitis, here joining its fellow, it forms the *Basilary Artery*, which communicates with the branches of the Internal Carotid, and is distributed to the posterior lobes of the Brain.

9 The branches of communication between the Vertebral Arteries, and the Internal Carotids, surround the Sella Turcica, and form the *Circulus Arteriosus.*

10 The INTERNAL MAMMARY arises from the anterior and lower side of the Subclavian;

11 It descends behind the Cartilages of the true Ribs, an inch from the Sternum, giving branches to the Thymus, Mediastinum, Pericardium, Pleura, Intercostal Muscles, &c. and passes from the Thorax by the side of the Ensiform Appendix of the Sternum to the Rectus Abdominis, where it communicates with the Epigastric Artery.

12 The CERVICAL arises from the upper side of the Subclavian;

13 This Artery sometimes arises singly, and immediately divides, or its two branches have distinct origins.—The *Cervicalis Anterior* runs behind the Carotid of the same side, and is distributed to the anterior Muscles of the Neck, and to those of the Larynx, Pharynx, &c.—The *Posterior Cervical*

Answ.

passes under the Transverse Process of the last Vertebra of the Neck, and runs to the posterior Cervical Muscles.

14 The SUPERIOR INTERCOSTAL arises from the lower side of the Subclavian;

15 It descends on the inside of the two or three uppermost Ribs near their heads, and sends off under each of these Ribs, a branch which runs along its lower edge, and supplies the Intercostal Muscles, contiguous parts of the Pleura, &c.

16 The INFERIOR THYROIDEAL arises from the upper part of the Subclavian, near the internal Mammary.

17 It ascends, passes behind the Primitive Carotid, and is chiefly distributed to the Thyroid Gland.

18 The SUPRA-SCAPULAR is often a considerable branch, it arises near the former, and sometimes from it;

19 It passes to the notch behind the Coracoid Process of the Scapula, and is distributed to the muscles at the back and upper part of that bone.

AXILLARY ARTERIES.

20 The AXILLARY ARTERIES begin at the first Rib, between the insertions of the Scaleni, being the continuations of the Subclavian;

21 Each terminates opposite the lower part of the Tendon of the Latissimus Dorsi, being about four inches long; its continuation is called, the *Brachial Artery.*

22 Each Axillary Artery sends off *five* or *six* branches, namely, the *External Mammary*, or *Thoracic Arteries*, the *Infra-Scapular*, the *Anterior Circumflex*, and the *Posterior Circumflex.*

23 There are usually *three* or *four* EXTERNAL MAMMARY Arteries, but two are chiefly noticed.

24 The SUPERIOR MAMMARY is the *first* branch given off from the trunk of the Axillary.

25 It descends between the Pectoralis Major, and Minor, giving branches to them, and to the Serratus Anticus, Latissimus Dorsi, &c.

Answ.

26 The Inferior Mammary is the *second* branch rising from the trunk of the Axillary;

27 It runs along the inferior edge of the Pectoralis Major, and is distributed to the adjacent Muscles, Breast and Skin.

28 The Infra-Scapular is the *third* branch which arises from the trunk of the Axillary;

29 It is a very considerable Artery, and takes the course of the inferior Costa of the Scapula, sending branches to the Subscapularis, Teres Major, and Minor, and large branches to the posterior part of the Scapula.

30 The Anterior Circumflex is small, it runs forward under the Coraco-Brachialis, then bends outward, and passes under the Deltoid.

31 The Posterior Circumflex is a considerable Vessel from the lower and posterior part of the Trunk;

32 It runs backward between the head of the Os Humeri and Teres Major, surrounding the Articulation, till it reaches the posterior part of the Deltoid, under which it passes, and is distributed.

33 The Brachial Artery, the continuation of the Subclavian, begins immediately below the Tendon of the Latissimus Dorsi;

34 It descends on the inside of the Arm, over the Coraco-Brachialis and short head of the Triceps, and along the inner edge of the Biceps, to the middle of the bend of the Arm.

35 Besides many small branches to the neighbouring parts, it sends off, 1st. The *Profunda Humeri Superior*, from the inner side of its upper part, a long branch which passes behind the bone, and communicates with the Radial Artery. 2dly. The *Profunda Inferior*, about the middle of the Arm, which descends toward the inner Condyle. 3dly. The *Anastomodicus Magnus*, given off a little above the inner Condyle, communicating with the Arteries of the fore-arm.

36 At the bend of the Arm it runs under the Aponeurosis of the Biceps, and under the Median Vein.

37 A little below the fold of the Arm, it divides into two principal branches, an inner, or posterior,

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named *Cubital;* and an outer, or anterior, named *Radial.*

38 The Ulnar Artery passes deep under the flexors of the hand and fingers, to the inner part of the fore arm, along the outer side of the Flexor Carpi Ulnaris, and Os Pisiforme, to the palm of the hand; passing over the anterior Annular Ligament, and under the Palmar Fascia, and here forming the *Superficial Palmar Arch.*

39 It gives off high up, 1st. The *Ulnar Recurrent:* 2dly. a little lower, the *Anterior Interosseous* Artery: and 3dly. the *Posterior Interosseous* Artery.

40 First, The Ulnar Recurrent runs to the inner Condyle, then turns up to communicate with branches from the Anastomodicus.

41 Secondly, The Anterior Interosseous is given off deeply, between the heads of the Ulna and Radius;

42 It descends close to the Interosseous Ligament, passes under the Pronator Quadratus, behind which it perforates the Ligament, and goes to the back of the wrist.

43 The Posterior Interosseous has usually a common origin with the anterior;

44 About a couple of inches below the Articulation it pierces the Interosseous Ligament, and having given off a *Recurrent* toward the external Condyle of the Os Humeri, it descends behind the Ligament and is distributed to the Muscles on the back of the Arm, and communicates with the anterior Interosseous and other Arteries.

45 The Superficial Palmar Arch crosses the upper part of the palm of the Hand, and passes towards the Thumb, lying between the Palmar Fascia and Flexor Tendons of the Fingers;

46 It sends off five Branches, viz. the *Ulnaris Profunda,* and *four Digital Arteries.*

47 The Ulnaris Profunda, which passes deep under the Flexor Tendons to join the Arcus Profundus of the Radial Artery, sends a branch to the inner side of the little Finger.

48 The Four Digital Arteries are given off in suc-

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cession; each passes between the heads of two neighbouring Metacarpal Bones; it then splits into two, one branch passing along the inside of one finger, the other branch along the outside of the adjacent finger. The *first* supplies the outside of the Little finger, and inside of the Ring finger. The *second* goes to the outside of the Ring finger, and inside of the Middle finger. The *third* to the outside of the Middle finger, and inside of the Fore finger. The *fourth* to the outside of the Index, and inside of the Thumb.

49 The Palmar Arch *terminates* by a branch of communication with the Radial Artery.

50 The Radial Artery takes the direction of the Radius, it passes over the Pronator Teres, and at the wrist it lays superficially between the Tendons of the Flexor Carpi, Radialis, and Supinator Longus;

51 In its course to the wrist, it first gives off the *Radial Recurrent* over the outer Condyle, to communicate with the Anastomosing branches of the Brachial; and in its course downward it supplies, by small branches, the various muscles near which it passes.

52 At the wrist it gives off the *Superficialis Volæ* to the Ball of the thumb, and palm of the hand, which often communicates with the Superficial Palmar Arch;

53 It then runs backward under the Tendons of the Abductor and Extensors of the Thumb, between the basis of the first bone of the Thumb, and of the Metacarpal Bone of the fore finger; it passes into the palm of the hand, where it forms the *Arcus Profundus.*

54 The Arcus Profundus runs under the Tendons of the Flexor Muscles, close to the bones, and joins the communicating branch of the Superficial Arch;

55 It gives a branch to the Thumb, and one passes from it between each Metacarpal Bone.

SECTION XLIV.

OF THE THORACIC ARTERIES.

Answ.

1 The *Thoracic Portion* of the Aorta gives off the *Bronchial*, the *Œsophageal*, and the *inferior Intercostal* Arteries.

2 The Bronchial Arteries are given off very irregularly, but they generally arise from the fore part of the Aorta, there is at least one for each lung, and sometimes more;

3 They pass directly to each lung, to the substance of which they are distributed.

4 The Œsophageal Arteries, from three to six in number, arise from the fore part of the Aorta, and are distributed to the Œsophagus.

5 The Intercostal Arteries arise in pairs along the back part of the descending Aorta, all the way to the Diaphragm;

6 They run transversely over the bodies of the Vertebræ, and supply the Intercostal Muscles, contiguous Pleura, &c.

SECTION XLV.

OF THE ABDOMINAL ARTERIES.

1 The Abdominal Aorta gives off the *Phrenic*, the *Cæliac*, the *Superior Mesenteric*, the *Emulgent*, the *Capsular*, the *Spermatic*, the *inferior Mesenteric*, the *Lumbar*, and the *Sacral* Arteries.

2 The Phrenic Arteries, two in number, arise from the Aorta, between the Crura of the lesser Muscle and the Diaphragm;

3 They run along the concave side of the Diaphragm, and are distributed to its fibres, and to the neighbouring parts.

4 The Cæliac Artery arises from the fore part of the Aorta, immediately after its passage through the Crura of the Diaphragm, nearly opposite to the

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junction of the last Dorsal with the first Lumbar Vertebra;

5 It soon divides into three great Branches, viz. the *Coronary* of the Stomach, the *Hepatic*, and the *Splenic* Artery.

6 The CORONARY OF THE STOMACH, the least of the three branches, passes to the left, and having reached the superior Orifice of the Stomach, it returns along the lesser curvature, giving branches which surround the Stomach; it communicates with the Pyloric Artery.

7 The HEPATIC runs to the upper and inner part of the Pylorus, there giving off first the *Pyloric* Artery, which is small, and a larger one, the *Gastro-Epiploica Dextra*, which runs along the right side of the great curvature of the Stomach, having first, at the Pylorus, given off the *Duodenal* Artery to the Duodenum; the Hepatic Artery then proceeds behind the Gall Ducts toward the Gall bladder, to which it gives off the *Cystic Arteries*, and then divides into two branches, one of which goes to the right, and the other to the left lobe of the Liver.

8 The SPLENIC runs towards the left, hidden behind the Pancreas, toward the Spleen, adhering to the Pancreas, to which it gives off several branches, the *Pancreaticæ*. Near the extremity of the Pancreas it gives off the *Gastro-Epiploica Sinistra* to the left portion of the great curvature of the Stomach, it then gives the *Vasa Brevia* to the great Extremity of the Stomach; and lastly, it divides into four or five considerable branches, which terminate in the Spleen.

9 The SUPERIOR MESENTERIC Artery arises from the fore part of the Aorta, a little below the Cæliac;

10 It descends obliquely to the left, at first covered by the Pancreas; it then passes over the Duodenum, and enters between the two Laminæ of the Mesentery. In the rest of its course it takes a sweep obliquely from the left to the right, and terminates at the extremity of the Ilium. By this means it forms a long arch, from which sixteen or eighteen branches proceed, chiefly to the small Intestines. The

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first and last branches are shorter than the middle ones. These branches join each other by numerous arches. The *first* considerable Branch is the *Colica Dextra*, which, passing along the superior part of the Colon, communicates with the inferior Mesenteric. The *second* principal Branch supplies the last portion of the Ilium and the first of the Colon, and is called, the *Ilio-Colica.*

11 The INFERIOR MESENTERIC Artery arises from the fore part of the Aorta, about a finger's breadth below the Spermatic Arteries.

12 It soon divides into three or four branches, distributed to the large Intestines; the first of which, communicating with the Colica Dextra upon the Colon, is named *Colica Sinistra.* The lower branch sends off the Arteria *Hæmorrhoidalis Interna* to the posterior part of the Rectum.

13 The EMULGENT Arteries, one for each Kidney, arise from the sides of the Aorta, immediately under the superior Mesenteric;

14 The right lies more backward and is longer than the left, passing behind the Vena Cava; they both lie behind the Emulgent Veins, and enter the substance of the Kidneys behind the Vein.

15 The RIGHT CAPSULAR comes, most commonly, from the right Emulgent, and the left from the Aorta, above the Emulgent;

16 They pass directly, and are distributed to the Renal Capsules.

17 The two SPERMATIC Arteries arise near each other from the fore part of the Aorta, between the Emulgents and inferior Mesenteric;

18 They descend obliquely outward, giving off minute branches; in men they pass through the Abdominal Ring, to be distributed to the Testes; while in women they remain within the Abdomen, and are distributed to the Ovaria and Uterus.

19 The LUMBAR Arteries arise from the posterior part of the abdominal Aorta, in five or six pairs;

20 They are distributed on each side to the loins.

21 The SACRAL Artery generally arises from the bifurcation of the Aorta;

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22 It is distributed to the Os Sacrum, contiguous Peritoneum, &c. &c.

SECTION XLVI.

OF THE PELVIC ARTERIES.

1 From the termination of the Aorta proceed, opposite the junction of the fourth and fifth Lumbar Vertebræ, the two *Iliac Arteries*, and the *Sacral* Artery already mentioned.

2 The Right Primitive Iliac passes first before the origin of the left Iliac Vein, and then descends before the right Iliac Vein.

3 The Left descends before and to the outer side of the left Vein.

4 Opposite the union of the Ilium and Sacrum, each divides into an *internal* and an *external* Iliac Artery.

5 The Internal Iliac passes into the Cavity of the Pelvis, a little before the Sacro-Iliac junction; and being directed a little forwards it forms a curve, whose convexity is turned downwards and backwards.

6 Its branches are the *lesser Iliac*, the *Glutæal*, the *Sciatic*, the *Pudic*, the *Obturator*, and the *Umbilical* Artery.

7 The Lesser Iliac, or *Ilio-Lumbalis*, is the first branch given off by the internal Iliac, but sometimes proceeds from the Glutæal;

8 It passes behind the Psoas, is distributed to the Iliacus Internus, to the Os Ilium, to the Quadratus Lumborum, &c.

9 The Glutæal, one of its greatest Branches, is the second Branch from the Trunk of the internal Iliac;

10 It passes from the Pelvis along with the Sciatic Nerve, through the greater Sacro-Ischiatic Notch. It is distributed in numerous branches to the Glutæus Maximus and Medius.

11 The Sciatic Artery is the third branch, and next in size to the Glutæal;

12 After detaching several branches to the Rectum, &c. it passes obliquely over the Sciatic Nerve, accom-

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panying it through the great Sacro-Ischiatic Notch, and descending with it along the posterior part of the thigh, and being distributed to the parts adjacent.

13 The Pudic Artery generally arises from one common Trunk with the Sciatic;

14 After sending branches to the Bladder, Rectum, &c. it quits the Pelvis through the great Sacro-Ischiatic Notch, then passes behind the Spine of the Ischium, and again enters the Pelvis through the lesser Sacro-Ischiatic Notch; it next runs on the inside of the Tuberosity of the Ischium, and separates into two, an inferior, or *Perineal Artery;* and superior, which is the *Artery of the Penis:*—the latter runs along the branch of the Ischium and Pubis, tc the Symphisis; in this course it sends an Artery to the bulb of the Urethra; and having reached the Symphisis Pubis, it divides into two branches, one the *Dorsal*, the other the *Cavernous* Artery of the Penis. The *Dorsal* runs along the superior groove of the Penis, the *Cavernous* enters and is distributed within the Corpora Cavernosa.

15 The origin of the Obturator Artery varies, sometimes from the internal Iliac, and sometimes from the lesser Iliac; now and then from the Epigastric, and but rarely from the external Iliac;

16 It passes from the Pelvis at the upper part of the Ligament of the Foramen Ovale, and is distributed to the Pectineus and Triceps.

17 The Umbilical Artery, important to the Fœtus, is nearly obliterated in the adult;

18 It ascends on the side of the Bladder, giving branches to it, the Peritoneum, and contiguous parts; it then assumes the form of a Ligament, and passes upward to the Umbilicus.

19 The External Iliac descends on the Iliac Muscle, as far as Poupart's Ligament.

20 It gives off two branches, namely, the *Epigastric* and *Circumflexa Ilii.*

21 The Epigastric arises internally from the External Iliac as it passes under the Fallopian Ligament;

22 It ascends obliquely behind the Tendon of the Trans-

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versalis Abdominis, toward the posterior part of the Rectus, behind which it runs, giving branches to the contiguous parts, and terminates by anastomosing with the internal Mammary. It is important that, in cases of Hernia, the Surgeon should be aware it sometimes gives off the Obturator Artery.

23 The Circumflexa Ilii arises from the outer side of the external Iliac, under the Fallopian Ligament;

24 It passes to the inner Labium of the Crista of the Ilium, where it is distributed to the Abdominal Muscles.

SECTION XLVII.

OF THE ARTERIES OF THE LOWER EXTREMITIES.

1 Femoral Artery is the name given to the external Iliac, immediately after it has passed under the Fallopian Ligament;

2 It descends over the brim of the Pelvis, and head of the Os Femoris; it is placed on the inside of the Femoral Vein; in this part of its course it is covered only by the skin, fat and glands; it then descends between the Sartorius, Vastus Internus, and Triceps, being covered for a great part of the way by the former. Below the middle of the Thigh it passes through the tendinous part of the Triceps, then over the inner ridge of the Linea Aspera, and below the Tendon of the Triceps into the Ham, where it forms the *Popliteal Artery;*

3 In the Groin it sends branches to the Inguinal Glands, &c. one or two to the parts of generation, called the *External Pudic; others* to the muscles near the groin, and the *Profunda.*

4 The Profunda, in size nearly equal to the Femoral, arises about four inches below Poupart's Ligament, from the posterior part of the Femoral Artery;

5 It passes deep betwixt the Adductors and Vastus Internus. It gives off high up, 1st. the *Circumflexa Interna*, distributed to the Pectinalis, Triceps, and Ob-

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turator; and anastomoses with the Obturator Artery.

2dly. The *Circumflexa Externa*, near the former, distributes to the external and upper part of the Thigh, anastomosing with the Gluteal.

3dly. The *Perforantes*, usually three in number, sent off lower down, and posteriorly; they perforate the Triceps, and are distributed to the back part of the Thigh.

6 The Popliteal Artery is the name given to the continuation of the Femoral;

7 It gives off two superiorly, called the *Superior Articular*, which pass to the upper part of the knee joint; two inferiorly, to the lower part of the knee joint, called the *Inferior Articular;* and one or two between these, called the *Middle Articular;*

8 It *divides* into two principal branches, namely, the *Anterior* and *Posterior Tibial* Arteries.

9 The Anterior Tibial passes between the heads of the Tibia and Fibula, through the Interosseus Ligament, then descends on its fore part, between the Tibialis Anticus and Extensor Digitorum: passes under the common Annular Ligament, and advances on the convex side of the Foot, as far as the interstice, between the first and second Metatarsal Bones.

10 As it passes between the Tibia and Fibula, it gives off several small branches; it gives off numerous others as it descends upon the Leg, and over the upper part of the Foot. At its termination it sends a large branch between the heads of the first and second Metatarsal Bones, to join the Posterior Tibial; it also sends several branches over the Metatarsal Bones, and a considerable one to each side of the great Toe.

11 The Posterior Tibial descends between the Soleus, Tibialis Posticus, Flexor Digitorum Communis, and Flexor Longus Pollicis; it then runs behind the inner ankle, and passes to the sole of the Foot, through the concavity of the Os Calcis, where it divides into the *External* and *Internal Plantar* Arteries;

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12 It gives branches to the Muscles as it descends, and the Nutrient Artery to the Bone; it also communicates behind the inner Ankle with the Anterior Tibial.

13 The EXTERNAL PLANTAR passes on the concavity of the Os Calcis obliquely under the sole of the Foot, to the base of the fifth Metatarsal Bone; thence it runs across, forming the *Plantar Arch*, toward the great Toe, where it communicates with the large branch of the Anterior Tibial. From the convex side of this *Plantar Arch* branches proceed to the outside of the second Toe, and to both sides of the three last ones, in the same way as the Digital Arteries of the hand are given off.

14 The INTERNAL PLANTAR, having passed beyond the middle of the sole of the Foot, divides sending one branch toward the great Toe, where it communicates with the branch of the Anterior Tibial, and another to the first Phalanges of the other Toes, communicating with the branches of the arch.

15 The FIBULAR Artery descends on the back of the Fibula, between the Soleus and Flexor Longus Pollicis, giving Rami in its course; and about the lower third of the Fibula it sends a branch between it and the Tibia to the Integuments of the Tarsus. Between the Astragalus and Tendo Achillis, it forms an arch with the Posterior Tibial, thence running outward above the external Ankle, it communicates with the Anterior Tibial, and sends off several Rami.

SECTION XLVIII.

OF THE VEINS IN GENERAL.

1 The VEINS are those Bloodvessels by which the Blood is returned to the Heart from the different parts of the body.

2 They are distinguished from Arteries, by being more transparent, less elastic, collapsing when cut across and having no pulsation.

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3 The *Veins* arise from the extreme branches of the Arteries, except in the Spleen, Corpora Cavernosa Penis, and Clitoris, where they begin by open mouths in the cells of these parts.

4 Their general mode of distribution resembles that of the Arteries;

5 They are more numerous and larger;

6 Their *structure* resembles that of the Arteries, but their coats, especially the elastic coat, are thinner.

7 The *Internal*, or *Cuticular Coat*, forms occasionally semilunar folds, called VALVES;

8 These are arranged in pairs, have their concave sides turned towards the Heart, and their straight edges meet when distended;

9 They are not found in the Veins of the Head, or Viscera:

10 They allow the Blood to flow towards the Heart, but prevent its taking an opposite course.

11 *Six Trunks* return the Blood to the Auricles of the Heart, which the Pulmonary Artery and Aorta had conveyed from the Ventricles.

12 The *Four Pulmonary Veins* return the Blood from the Lungs to the left Auricle. The *Superior* and the *Inferior Cava* bring back to the right Auricle that which had been distributed by the Aorta.

13 The Heart has one Vein only, called the *Coronary Vein*, which opens into the posterior and inferior part of the right Auricle, very near the Septum Auriculorum.

SECTION XLIX.

THE SUPERIOR CAVA.

1 The SUPERIOR CAVA arises from the superior part of the right Auricle, where it is surrounded by the Pericardium.

2 It ascends a little to the right and backwards, and terminates behind the Cartilage of the first Rib, by dividing into two branches, called the *Subclavian Veins.*

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3 It receives the *Vena Azygos*, the *right internal Mammary Vein*, and several lesser branches.

4 The Vena Azygos is the Trunk of the Intercostal Veins of the right side, and of the inferior Intercostal of the left.

5 It crosses from the left to the right; ascends on the right side of the bodies of the Vertebræ, passes behind and above the root of the right Lung, and enters the posterior part of the Vena Cava.

6 The Right Subclavian receives three vessels, viz. the *External Jugular;* the *Internal Jugular*, and the *Vertebral.*

7 The Left Subclavian, by much the longest, passes before and across the Arteries going to the Head; and receives, besides *the same Veins* as the right, the Trunk of the *left superior Intercostals*, and the *left internal Mammary.*

8 The Axillary Vein is a continuation of the Subclavian, and receives the blood of the Veins, which correspond to the branches of the Axillary Artery.

SECTION L.

OF THE VEINS OF THE HEAD AND NECK.

1 The External Jugular receives the blood of the following Veins, viz. of the *Frontal* Vein, from the Forehead: the *Angular* Vein, from about the inner angle of the Eye; the *Temporal* Vein, from the Temple; the *Auricular* Vein, from the Ear; the *Lingual* Vein from the Tongue; the *Occipital* Vein, from the Occiput; and the *Supra-Humeral* Vein, from the Scapula;

2 It runs superficially down the Neck, over the Muscles and passing behind the Clavicle, it terminates generally in the Subclavian of the same side, but sometimes in the Axillary, and sometimes in the union of these two.

3 The Internal Jugular, a large Vein, receives branches from the Facial and Temporal, but it is chiefly formed by the Sinuses of the Dura Mater.

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4 These are the *Cavernous*, the *Circular*, the *Superior* and *Inferior Petrosal*, the *Occipital*, the *Inferior Longitudinal*, the *Torcular Herophili*, and the *Superior Longitudinal.*

5 The CAVERNOUS SINUS is situated on each side of the Sella Turcica, at the Apex of the Petrous portion of the Temporal Bone;

6 It receives blood from the great Ophthalmic Veins.

7 The CIRCULAR SINUS is situated around the Pituitary Gland.

8 The SUPERIOR PETROSAL SINUS is placed in the groove of the ridge of each Os Petrosum;

9 They receive their blood from the Cavernous and Circular Sinuses.

10 The INFERIOR PETROSAL SINUS is situated along the Suture, formed by the Os Petrosum and Os Occipitis;

11 It receives blood from the Cavernous and Circular Sinuses.

12 The OCCIPITAL SINUS is placed in the inferior portion of the Internal Crucial Spine of the Os Occipitis;

13 It receives blood from the Cerebellum.

14 The INFERIOR LONGITUDINAL SINUS is situated on the lower edge of the Falx.

15 The TORCULAR HEROPHILI is situated in the junction of the Falx and Tentorium;

16 It receives blood from the inferior Longitudinal Sinus, and from the Vena Magna Galeni.

17 The SUPERIOR LONGITUDINAL SINUS is situated in the furrow of the Spine of the Os Frontis, upper edges of the Parietal bones, and superior portion of the internal Crucial Ridge of the Os Occipitis.

18 The LATERAL SINUSES are placed along the posterior edge of the Tentorium, in the grooves of the lateral portions of the Crucial Ridge of the Os Occipitis; in those on the inside of the posterior inferior Angle of the Parietal bones; in those of the inside of the Mastoid portions of the Temporal bones; and in those which are situated on each side of the Foramen Magnum of the Occipital bone;

19 They receive blood from the superior Longitudinal,

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Torcular Herophili, Occipital and Petrosal Sinuses;

20 They terminate at the Jugular Foramina, where the INTERNAL JUGULAR VEINS begin;

21 These descend by the sides of the Cervical Vertebræ, along the edge of the Longus Colli, behind the Sterno and Omo Hyoideus, behind the external extremity of the Clavicle;

22 They terminate in the Subclavian Veins.

23 The VERTEBRAL VEIN accompanies the Vertebral Artery through the Foramina of the transverse processes of the Cervical Vertebræ;

24 It does not enter the Cranium with the Vertebral Artery, but receives blood from the lateral Sinuses through the Foramen Condyloideum Posterius, and Foramen Mastoideum, and from the Vertebral Canal:

25 It terminates in the upper and posterior part of the Subclavian Vein.

SECTION LI.

OF THE VEINS OF THE UPPER EXTREMITIES.

1 The VEINS OF THE EXTREMITIES are divided into the *Deep-seated* and the *Superficial*.

2 The *Deep-seated* Veins regularly accompany the Arteries, and receive the same names;

3 Those of the upper Extremity are, *one Axillary Vein*, *two Brachial Veins*, *two Radial*, *two Interosseal*, and *two Ulnar Veins.*

4 The *Superficial* Veins lie under the skin, and follow a different course;

5 Those of the superior Extremity are the *Cephalic*, and the *Basilic*.

6 The CEPHALIC is situated along the outer and forepart of the Arm and Fore-arm.

7 At the Extremity of the Radius it receives branches from the back part of the Hand, toward the Thumb. Between the Thumb and the Metacarpus it receives the *Cephalica Pollicis*, and a little below the bend of the Arm, the *Mediana Cephalica;*

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8 It ascends before the external Condyle of the Humerus, along the outside of the Biceps Muscle; passes between the Pectoralis Major and Deltoid, and terminates in the Axillary Vein.

9 the **Basilic** is situated along the inner and fore part of the Arm and Fore-arm;

10 It receives branches from the back part of the Hand, towards the little Finger; passes over and around the internal part of the Fore-arm and internal Condyle of the Humerus, above which it receives the *Mediana Basilica*, and runs along the inner edge of the Biceps;

11 It terminates in the Axillary Vein.

12 The **Mediana** is situated between the Cephalic and Basilic Veins;

13 It divides into two great branches about the middle of the Fore-arm, namely, the *Mediana Cephalica*, and *Mediana Basilica;* which join the Cephalic and Basilic Veins.

14 It receives the *Vena Profunda*, a branch of communication with the deep-seated Veins.

SECTION LII.

OF THE INFERIOR CAVA.

1 The **Inferior Cava**, larger than the superior, arises from the inferior part of the right Auricle of the Heart.

2 It soon pierces the Diaphragm, is placed in a notch at the posterior part of the Liver, descends along the bodies of the Vertebræ to the right of the Aorta; and opposite the junction of the fourth and fifth Vertebræ, it divides into two branches, called, the *Iliac Veins.*

3 In this course it receives first, the *two Phrenic*, or *Diaphragmatic Veins;* next the *four Hepatic Veins;* lower down the *two Emulgent*, and the *Spermatic Veins;* and lastly, the *Lumbar Veins.*

4 The **Hepatic** Veins vary in number, they enter the

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anterior part of the Inferior Cava, just where it passes behind the Liver.

5 The EMULGENTS are the Veins of the Kidneys; the *left* is the longest, passes before the Aorta, and receives the left Spermatic Vein.

6 The SPERMATIC Veins correspond with the Arteries of that name, the *right* enters the Vena Cava, the *left* opens into the left Emulgent.

7 The Two PRIMITIVE ILIAC Veins follow the distribution of the Iliac Arteries.

8 They divide at the Sacro-Iliac Junction into *internal Iliac* and *external Iliac*.

9 The INTERNAL ILIAC receives blood from the Veins which correspond to, and accompany the various branches of, the internal Iliac Artery.

10 The EXTERNAL ILIAC accompanies the Artery, and is situated at its inner side; it receives the Veins of the lower Extremities.

SECTION LIII.

OF THE VEINS OF THE LOWER EXTREMITIES.

1 THE VEINS OF THE LOWER EXTREMITIES, like those of the upper, have a deep-seated and a superficial set.

2 The *Deep-seated* are, the *Femoral Vein*, *Popliteal Vein*, *two posterior Tibial Veins*, *two anterior Tibial Veins*, and *two Interosseal Veins.*

3 The *Superficial* are, the *Saphena Major*, and *Saphena Minor.*

4 The SAPHENA MAJOR is situated on the inner part of the Foot, Knee and Thigh;

5 It receives branches from the upper part of the back of the Foot, towards the great Toe; runs over the Malleolus Internus, along the inner part of the Tibia, just behind the internal Condyle of the Femur, and follows the direction of the Sartorius up the Thigh, receiving branches in its course;

6 It terminates in the Crural Vein, a little below Poupart's Ligament.

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7 The Saphena Minor begins on the outside of the Foot, ascends on the same side of the Tendo Achillis and Gastrocnemius, and enters the Ham;

8 It terminates in the upper part of the Popliteal Vein.

SECTION LIV.

OF THE VENA PORTÆ.

1 The Vena Portæ is a Vein of great size, peculiar to the Liver, and which has two sets of branches;

2 *One set* called collectively, *Vena Portæ Abdominalis*, is distributed over the Stomach, Intestines, Spleen, and Pancreas, accompanying the Arteries of these parts, and receives their Blood.

3 The *other set*, called collectively, the *Vena Portæ Hepatica*, is ramified through the substance of the Liver, secretes the bile, and terminates in the Hepatic Veins.

4 The *Trunk* of the *Vena Portæ*, is situated partly in the transverse fissure of the Liver, where it is called, the *Sinus* of the Vena Portæ, and partly it is contained in Glisson's Capsule;

5 It is formed by three considerable Veins, namely, the *Vena Mesenterica Major*, the *Vena Splenica*, and the *Vena Mesenterica Minor*, or *Hæmorrhoidalis Interna*.

6 The Mesenterica Major, or *Superior*, receives blood from the Veins corresponding to the superior Mesenteric Artery.

7 The Splenica receives its blood from the Spleen, and from a branch of the Coronary Vein of the Stomach, the Pancreatic Veins, and the Gastro-Epiploica Sinistra.

8 The Mesenterica Minor, or *Inferior*, obtains its blood from the inferior Mesenteric, and some branches of the Cæliac Arteries;

9 It also receives smaller Veins, viz. the *Cystic*, the *Pyloric*, and the *Duodenal Veins;* as also the *Gastrica Dextra*, and the *Coronary Vein* of the Stomach.

SECTION LV.

OF THE ABSORBENT SYSTEM IN GENERAL.

Answ.

1 The ABSORBENTS are a numerous set of minute transparent vessels, distinct from the blood vessels, which take up the nutritive part of our food, and the various fluids and solids of the body, to make way for the deposit of fresh matter.

2 They are divided into *Lacteals* and *Lymphatics.*

3 This distinction has arisen only from the colour of their contents,—the *Lacteals* contain a milk-like fluid, the chyle, they are the absorbents of the small Intestines; all the other absorbents of the body are called *Lymphatics*, containing Lymph.

4 They begin by minute open mouths, *first* from all the internal Cavities; *secondly*, from the Cellular Membrane, and every interstice; *thirdly*, from the Ducts and Glands; *fourthly*, from the surface of the Skin, Stomach, Intestines, &c.

5 They follow the general course of the Veins: in the Limbs, there is a *Deep-seated* and a *Superficial* set.

6 They *terminate* by two Trunks behind the middle of each Clavicle, in the Subclavian Vein, near the angle formed by it and the internal Jugular.

7 The *left* is the principal Trunk, and is called, the THORACIC DUCT; it receives all the absorbents of the body, except those of the right arm and right side of the head, which form the *right* Trunk.

8 They are very thin and transparent, but remarkably dense, and stronger than the red veins.

9 They have a *muscular* and a *cuticular Coat.*

10 The *cuticular Coat* is the most internal, and forms numerous pairs of valves, in every absorbent vessel.

11 The LYMPHATIC GLANDS, an important part of the absorbent system, are small glandular bodies, through which the absorbents convey their contents before they terminate in the common Trunks.

12 They are found in clusters in various parts of the body, as just below the *Occiput*, under the *Ears* and *Jaw*, along the side of the *Neck*, behind the *Clavicle*,

Answ.

in the *Axilla*, and two or three near the *Elbow;* in the *Thorax*, the Bronchial Glands, at the root of the Lungs; in the *Abdomen*, called Mesenteric Glands, belonging to the Lacteals; in the *Loins* and *Pelvis*, in the *Inguen;* and two or three in the *Ham.*

13 The Absorbents which enter a Gland are called *Vasa Inferentia*, they are more numerous than those which pass out of the Gland, and are called, *Vasa Efferentia.*

14 These Glands appear to be of *cellular structure*, and not composed of convoluted absorbents.

SECTION LVI.

OF THE LYMPHATICS OF THE HEAD AND NECK.

1 The LYMPHATICS OF THE HEAD AND NECK are divided into the *Facial*, *Temporal*, *Occipital*, and *Thyroideal* Lymphatics.

2 The FACIAL accompany the Trunk and Branches of the Facial bloodvessels, and pass through small glands situated in their course.

3 The TEMPORAL accompany the Temporal bloodvessels, and pass through glands at the root of the Zygomatic Process.

4 The OCCIPITAL accompany the Occipital bloodvessels, pass through glands behind the Mastoid process, and descend with the others along the external and internal Jugular Veins, to join the Lymphatics of the upper Extremities.

5 The THYROIDEAL descend on each side the Trachea, through the Cervical Glands, to the commencement of the Thoracic Duct.

6 Lymphatics have never been demonstrated in the Brain, but their existence is not doubted.

SECTION LVII.

OF THE LYMPHATICS OF THE UPPER EXTREMITIES.

Answ.

1 The Superficial Lymphatics of the upper extremity follow the course of the Cephalic and Basilic Veins; those accompanying the Basilic enter two or three glands just above the internal Condyle of the Os Humeri.

2 The Deep-seated accompany the Arteries, there being three or four, or more, Lymphatic Trunks to each Artery.

3 They all terminate in the Axillary Lymphatic Trunk;

4 This opens into the Thoracic Duct on the left side.

5 The *right Axillary* Lymphatic Trunk terminates by a second Trunk common to it, and the Lymphatics of the right side of the Head.

SECTION LVIII.

OF THE LYMPHATICS OF THE LOWER EXTREMITIES.

1 The Superficial Lymphatics of the lower extremities follow the course of the Saphena Major and Minor Veins. Those accompanying the Saphena Minor, enter two or three glands placed in the Ham.

2 The Deep-seated accompany the Arteries; several Lymphatic Trunks are found with each Artery.

SECTION LIX.

OF THE LYMPHATICS OF THE TRUNK.

1 The Lymphatics from the Nates, and from the Organs of Generation, pass through the Inguinal Glands, then under Poupart's Ligament to glands situated at the brim of the Pelvis; those from the Testicles pass along the Spermatic Chord to the Lumbar Glands; those from the Cavity of the Pelvis generally proceed along the internal Iliac Arte-

Answ.

ry, and a third set ascends upon the Psoas Magnus. At the posterior part of the Pelvis they collect toward the right side, forming a Plexus in the right Lumbar Region, and at the third Lumbar Vertebra they unite, and being soon joined by the Lacteals, form the Receptaculum Chyli.

2 The Abdominal Lymphatics from the *Kidneys*, proceed through glands to a considerable vessel near the Aorta; those from the *Spleen* pass along with its Artery; those from the *Pancreas* join the Lymphatics of the Spleen; those from the *Stomach* in part join those of the Spleen; others follow the course of the Coronary Artery, being joined by vessels from the Liver; those of the *Liver*, either ascend its broad Ligament, or join the deep-seated vessels, or ascend in trunks behind the Sternum. The *Lymphatics of the Intestines* are called *Lacteals*, they run through glands placed in the Mesentery, to the Receptaculum Chyli.

3 The Lymphatics of the Lungs are either superficial or deep-seated, and passing through the Bronchial Glands, they partly join the Thoracic Duct behind the bifurcation of the Trachea, while some of those from the right Lung ascend in a trunk before the superior Cava, and terminate in the great Lymphatic Vessel which opens between the right Subclavian and Jugular Vein: and others from the left, passing behind the arch of the Aorta, terminate near the end of the Thoracic Duct. The *Lymphatics of the Heart* accompany the Coronary Vessels, and those of the left side terminate with the last mentioned Lymphatics of the Lungs, while those of the right terminate between the right Subclavian and Jugular Veins.

SECTION LX.

OF THE LACTEAL SAC AND DUCT.

1 The Lacteal Sac is situated on the body of the first Lumbar Vertebra, behind the right Crus of the Diaphragm, and above the right Renal Artery;

Answ.

2 It is irregularly oval, diminishing towards its upper part, being about an inch in length, and a third of an inch in breadth.

3 From the upper part proceeds the **Lacteal**, or **Thoracic Duct**.

4 This passes between the Crura of the Diaphragm and beneath the right side of the Aorta, and ascends between that vessel and the Vena Azygos, to the fifth Dorsal Vertebra, where that Vein, in its passage to join the Cava, covers it. The Duct then passes behind the Œsophagus and the curvature of the Aorta, to the left side, till, behind the left Carotid Artery, and on that side of the Œsophagus, it ascends to the first or second Dorsal Vertebra, and, leaving the Carotid, makes a circular turn and divides: uniting again almost immediately, it descends,

5 And *terminates* behind the internal Jugular Vein, in the upper part of the Subclavian Vein.

6 Its opening into the Vein is guarded by two Semilunar Valves.

NEUROLOGY.

SECTION LXI.

OF THE NERVES IN GENERAL.

1 The **Nerves** are long, white firm chords which ramify, after the manner of the bloodvessels, to be distributed to all parts of the body.

2 They *arise* from the Brain, Medulla Oblongata, and Medulla Spinalis.

3 They in general follow the *course* and *distribution* of the Arteries, arising in pairs, and dividing into Branches and Ramifications.

4 They anastomose; and in some parts their mutual communications are numerous, forming a *Plexus;* at others a knot called *Ganglion*, is found in the course of a Nerve, from which numerous branches arise.

Answ.

5 The Nerves consist of Fasciculi, or bundles of distinct longitudinal fibres, closely connected together by cellular substance.

6 Their membranous coverings are said to be continuations of those which envelop the Brain and Spinal Marrow; these are distinct at their origin, but afterwards a firm cellular texture only appears to surround them.

7 They are well supplied with bloodvessels.

8 The GANGLIONS are of a redish gray colour, of firm consistence, and formed by a close intertexture of filaments.

9 The Nerves are divided into *Cerebral*, of which there are ten pairs; and *Spinal*, of which there are thirty pairs; besides these the *Grand Sympathetic Nerve.*

10 The *Cerebral Nerves* pass out through various holes in the basis of the Cranium.

11 The *Spinal Nerves* through the Lateral Foramina of the Vertebræ, and the Anterior Foramina of the Os Sacrum.

12 The Ten Cervical Pairs of Nerves are: the First Pair, or *Olfactory* Nerves; the Second Pair, or *Optic* Nerves; the Third Pair, or *Motores Oculorum;* the Fourth Pair, or *Pathetici;* the Fifth Pair, or *Trigemini;* the Sixth Pair, or *Motores Externi;* the Seventh Pair, or *Auditory* Nerves; the Eighth Pair, or *Par Vagum;* the Ninth Pair, or *Lingual* Nerves; and the Tenth Pair, or *Sub-occipital* Nerves.

13 The Spinal Nerves are divided into *Cervical*, *Dorsal*, *Lumbar*, and *Sacral.*

SECTION LXII.

OF THE CEREBRAL NERVES.

FIRST PAIR.

1 The OLFACTORY Nerves arise from the Corpora Striata,

2 They pass forward on each side of the Crista Galli, becoming gradually larger and softer, and reach the Os Ethmoides without any communication between them.

Answ.

3 They split into a great number of filaments, and pass out of the Cranium through the holes of the Cribriform Plate of the Ethmoid Bone;

4 These are ramified on the Membrane lining the Septum Narium, and the rest of the Cavity of the Nose.

5 They communicate by several filaments, with the Ophthalmic and superior Maxillary Nerves

SECOND PAIR.

6 The Optic Nerves, the largest of the Cervical Pairs, arise from the Thalami Nervorum Opticorum;

7 They first pass outward, then approach each other, unite before the Sella Turcica, and again separate;

8 They quit the Cranium through the Foramina Optica.

9 They pass to and enter the Globe of the Eye, in order to form the Retina.

THIRD PAIR.

10 The Motores Oculorum arise from the Crura Cerebri, just before the anterior edge of the Pons Varolii;

11 They perforate the Dura Mater behind the sides of the Posterior Clynoid process, and run along the upper part of the Cavernous Sinus.

12 They pass out of the Cranium through the Foramen Lacerum Orbitale Superius.

13 Each sends. 1st. a branch to the *Rectus Superior*, which gives a ramus to the Levator Palpebræ Superioris.

2dly. A branch to the *Rectus Internus.*

3dly. A branch to the *Rectus Inferior.*

4thly. The longest branch to the *Obliquus Inferior.*

5thly. A branch to the *Lenticular Ganglion.*

14 From the Lenticular Ganglion proceed several filaments, forming the *Ciliary Plexus;* they surround the Optic Nerve, perforate the Sclerotic Coat, and run between it and the Choroid as far as the Iris, to which they are distributed.

FOURTH PAIR.

Answ.

15 The Pathetici, the smallest pair, arise behind the Nares.

16 They pass on each side to the edge of the Tentorium, within which they are concealed, and along the upper part of the Cavernous Sinus.

17 They pass out of the Cranium through the Foramen Lacerum Orbitale Inferius.

18 They terminate in the Obliquus Superior.

FIFTH PAIR.

19 The Trigemini arise from the sides of the Pons Varolii, by numerous distinct filaments.

20 They pass toward the point of the Os Petrosum, where each perforates the Dura Mater, a little below the commencement of the Tentorium, and forms a flat *Semilunar Ganglion*.

21 From its Semilunar Ganglion each gives off three great Branches, namely, the First, or *Ophthalmic;* the Second, or *Superior Maxillary;* the Third, or *Inferior Maxillary*.

22 The Ophthalmic Branch passes through the Foramen Lacerum Orbitale Superius.

23 The *Superior Maxillary* passes through the Foramen Rotundum to the upper Jaw.

24 The *Inferior Maxillary* passes through the Foramen Ovale toward the lower Jaw.

25 The Ophthalmic sends off, 1st. a *Frontal* branch through the Superciliary Notch to the Forehead. 2dly. A *Nasal* branch towards the inner Canthus, to the Lachrymal Sac, and parts adjacent, sending branches through the internal Orbitar Foramina, one of which takes a circuitous course to the tip of the Nose. 3dly. A *Lachrymal* branch to the Lachrymal Gland. 4thly. Some branches of communication to the Lenticular Ganglion, and to the fourth pair.

26 The Superior Maxillary sends off, 1st. The *Pterygoid* branch through the Pterygoid Foramen, to join the Portio Dura of the seventh pair. 2dly. The

Answ.

Spino-Palatine to the Nose, through the Foramen of that name. 3dly. The *Palatina*, down the Palatine Foramen to the Palate. 4thly. The *Infra-Orbitar* through the Canal of that name, to the Cheek and upper Lip. 5thly. Filaments to the Teeth of the upper Jaw.

27 The *Inferior Maxillary* sends off, 1st. A *Temporal* branch. 2dly. A branch to the Cheek. 3dly. A *Lingual* branch; this is the true Gustatory Nerve, its branches terminating in the Papillæ of the Tongue. 4thly. The *Dental* branch, which is the continuation of this Nerve, it enters the Canal of the lower Jaw, is distributed to the Teeth, and comes out at the Chin through the mental hole.

SIXTH PAIR.

28 The Motores Externi arise between the Pons Varolii and the Corpora Olivaria.

29 Advancing to the Dura Mater, they perforate it on one side of the junction of the Sphœnoid and Occipital Bones. They then run through the Cavernous Sinus by the side of the Carotid Arteries, to which they closely adhere, and also communicate with a branch of the fifth pair; they likewise send backward a filament along the Carotid Artery, accompanying it in its canal, and joining the great Sympathetic.

30 They finally quit the Cranium through the Foramen Lacerum Orbitale Superius.

31 Each is distributed wholly to the Rectus Externus Oculi.

SEVENTH PAIR.

32 The Auditory Nerves arise from the lateral and posterior part of the Pons Varolii.

33 They pass into the Meatus Auditorius Internus of the Ear on each side.

34 Each consists of two portions, namely, the *Portio Mollis*, and *Portio Dura*

35 The Portio Dura, small and firm, is placed anteriorly;

Answ.

the Portio Mollis, larger and softer, is situated more posteriorly.

36 The PORTIO MOLLIS enters the organ of hearing at the basis of the Cochlea, and inner side of the Vestibulum, and is alone distributed to the Labyrinth.

37 The PORTIO DURA passes from the Cranium through the Fallopian Aqueduct, and Stylo-Mastoid Foramen;

38 It first gives filaments through the small hole on the superior surface of the Os Petrosum, to join the Pterygoid Nerve, then one to the Stapideus, and as it goes out, another, which passing through the Tympanum, is called *Chorda Tympani*, and joins the Lingual branch of the inferior Maxillary Nerve.

29 On quitting the Stylo-Mastoid Foramen, the Portia Dura forms a Plexus, whose branches are widely distributed over the side of the Head and Neck, to the Temple, to the Eyelids, Cheeks, Nose, Lips, Chin, Head, and Neck, forming what has been called the *Pes Anserinus.*

40 It freely communicates with the three branches of the fifth pair, and with the Cervical Nerves.

EIGHTH PAIR.

41 The PAR VAGUM arise from the Corpora Olivaria laterally.

42 At its commencement it consists of two separate portions, the first called the *Glosso-Pharyngeal Nerve;* and the second, the true *Par Vagum.*

43 They run towards the Jugular Foramen, before the extremity of the Lateral Sinus, from which the Nerve on each side is separated by two small bony prominences, and a membranous Septum. Here the Glosso-Pharyngeal Nerve is situated before the Par Vagum, and separated from it by a thin membranous Septum.

44 It is joined by the *Nervus Accessorius*, in its passage through the Jugular Foramen.

45 The NERVUS ACCESSORIUS ascends from the Spinal Marrow, enters the Cranium at the Foramen Magnum Occipitale, and joining the Par Vagum, passes

Answ.

out again to be distributed to the Integuments and Muscles at the back of the Neck.

46 The Glosso-Pharyngeal Nerve is distributed to the Tonsils, Pharynx, and Tongue; and sends branches of communication to the fifth, seventh, and ninth pairs.

47 The Par Vagum passes before and adheres to the ninth pair, and to the Superior Cervical Ganglion of the Great Sympathetic, it descends along the Neck by the side of the Carotid Artery, behind the internal Jugular Vein, and in company with the Great Sympathetic Nerve;

48 It *first* gives a branch to the Glosso-Pharyngeal. 2dly. The *Pharyngeal* to the Pharynx. 3dly. The *Laryngeal* to the Larynx and Thyroid Gland. 4thly. Branches to the Cardiac Plexus, and others of communication with the Great Sympathetic, the Recurrent, and the ninth pair;

49 It enters the Thorax, passing before the Subclavian Artery and Vein on the right side; but on the left behind the Subclavian Vein, and before the arch of the Aorta;

50 It then gives off the *Recurrent.*

51 The Recurrent forms a kind of loop which embraces the Subclavian Artery on the right side and the Aorta on the left: they then run behind these vessels, ascending to the posterior part of the Larynx to be distributed to its Muscles, and communicate with the Great Sympathetic, the Cardiac Plexus, &c.

52 The Par Vagum gives branches which go to the Heart, and form the *Cardiac Plexus;* branches to the Lungs, forming the *Pulmonary Plexuses;* they then pass to the Œsophagus, descend behind it to the Stomach, forming the *Œsophageal Plexus*, and especially distributed to the Stomach, forming the *Coronary Plexus.*

NINTH PAIR.

53 The Lingual Nerves arise between the Corpora Pyramidalia and Olivaria, by several filaments, which uniting generally form two small chords.

Answ.

54 They pierce the Dura Mater, and pass out of the Cranium by the Anterior Condyloid Foramina.

55 After quitting the Cranium each is united to the Trunk of the eighth pair, to the Superior Cervical Ganglion, and, by a branch of communication, to the tenth pair;

56 It passes before the large Ganglion of the Great Sympathetic, runs between the internal Jugular Vein and Carotid Artery, and then to the Tongue, to the Muscles of which it is distributed.

57 Shortly after its exit from the Cranium, it gives off a large branch, which descends along with the Carotid Artery, called *Descendens Noni;*

58 This joins branches from the first, second, and third Cervical, and is distributed with them to the Muscles at the fore part of the Neck.

TENTH PAIR.

59 The Sub-occipital Nerves arise at the extremity of the Medulla Oblongata, and beginning of the Spinal Marrow, by small filaments;

60 They pass directly outward, and having pierced the Dura Mater where the Vertebral Arteries enter, and running in its duplicature, emerge under the edge of the Occipital Foramen.

61 They send branches of communication to the eighth and ninth pairs, to the Superior Cervical Ganglion, and to the first Cervical pair; and are then distributed to the extensor Muscles of the Head and Occiput.

SECTION LXIII.

OF THE VERTEBRAL NERVES IN GENERAL.

1 Each Vertebral Nerve arises from the Medulla Spinalis by two flat Fasciculi of Nervous Filaments, one anterior, the other posterior.

2 The two Fasciculi uniting, perforate the Dura Mater, and pass through the Lateral Foramina of the Vertebral Column;

Answ.

3 They then unite and form a Ganglion, from which the Trunk is produced; from which immediately one branch passes backwards and one forwards.

4 There are thirty pairs of Vertebral Nerves, viz.

5 Seven *Cervical*, twelve *Dorsal*, five *Lumbar*, and six *Sacral.*

SECTION LXIV.

OF THE CERVICAL NERVES.

FIRST PAIR.

1 The First Cervical Pair pass out between the first and second Cervical Vertebræ.

2 Its *Anterior Branch* communicates with the Superior Cervical Ganglion, and with the Sub-occipital Nerve; it sends branches to join the Decendens Noni, and the second Cervical Pair, and others to the Muscles at the anterior part of the Neck.

3 Its *posterior branch*, the most considerable, is distributed to the Muscles at the upper and back part of the Neck?

SECOND PAIR.

4 The second Cervical Pair pass out between the second and third Cervical Vertebræ.

5 Its *anterior branch* communicates with the second and fourth Cervical Pairs, the Great Sympathetic, the Descendens Noni, and often concurs in the formation of the Phrenic Nerve.

6 Its *posterior branch* follows a nearly similar course to that of the first pair, with which it anastomoses, as well as with the Portio Dura of the seventh.

THIRD PAIR.

7 The Third Cervical Pair pass out between the third and fourth Cervical Vertebræ.

8 Its Anterior Branch communicates with the Great Sympathetic, fifth Cervical, and sends a large branch to the Phrenic.

Answ.

9 Its *posterior branch* is distributed to the back of the Neck, and with those already described forms a Plexus of Nerves which supply the back of the Neck and Head.

DIAPHRAGMATIC NERVE.

10 The DIAPHRAGMATIC, OR PHRENIC NERVE, is formed by branches from several of the Cervical Nerves, of these the most constant and largest is from the third Cervical;

11 It runs before the Scalinus, enters the Thorax behind the anterior extremity of the Clavicle, then receiving a filament from the First Dorsal, and communicating with the Sympathetic, it passes obliquely before the Subclavian Artery, and on one side the Par Vagum, near the origin of the Recurrent. Within the Thorax it passes before the root of the Lung, along the side of the Pericardium, then running backward enters the Diaphragm.

12 The *right* Nerve runs straighter, and lies more anteriorly; the *left* lies backward toward the Aorta, then bending over the Pericardium, where it covers the Apex of the Heart it is longer than the right.

13 It terminates by numerous ramifications on the greater Muscle of the Diaphragm, and by some filaments on the lesser, where it communicates with the Sympathetic and contiguous Abdominal Plexuses.

FOURTH, FIFTH, SIXTH, AND SEVENTH PAIRS.

14 The FOURTH, FIFTH, SIXTH, and SEVENTH CERVICAL PAIRS, follow a similar course and distribution; they pass from the Spine between their respective Vertebræ.

15 Their *posterior Branches* are all small, and distributed to the posterior part of the Neck, and upper part of the Back.

16 These *anterior Branches* are considerable, they send small branches of communication to the Great Sympathetic, a few to the neighbouring Muscles, Glands, &c. &c. they then unite, and, together with the first Dorsal, form the AXILLARY PLEXUS.

SECTION LXV.

OF THE BRACHIAL NERVES.

Answ.

1 The Axillary Plexus is formed by the four inferior Cervical and first Dorsal Nerves;

2 It consists at its origin of three distinct portions, viz. a common Trunk formed by the union of the fourth and fifth Cervical; below a common Trunk, formed by the union of the last Cervical and first Dorsal, and between these the sixth Cervical Nerve alone; these soon unite and form a bundle of Nerves so interwoven as not to be unravelled, which pass under the Clavicle with the Artery and Vein into the Axilla.

3 From this Axillary Plexus are given off the Brachial Nerves:

4 It first gives off the *Scapularis* and the *Thoracic Nerves*, and then divides into six large Nerves, viz. the *Musculo-Cutaneus*, the *Median*, the *Cubital*, the *Internal Cutaneus*, the *Radial*, and the *Axillary*.

5 The *Musculo-Cutaneus*, *Median*, *Cubital* and *Internal Cutaneus* arise anteriorly, the *Radial* and *Axillary* posteriorly.

6 The Scapularis arises from the upper and back part of the Plexus;

7 It runs to the Coracoid Notch, passes over it, and is distributed to the Supra and Infra Spinatus, and Teres Minor.

8 The Thoracici, three in number, arise from the upper part of the Plexus.

9 They are distributed to the Pectoralis Major, and Minor, Serratus Major Anticus, and Latissimus Dorsi.

10 The Musculo-Cutaneus passes through the substance of the Coraco-Brachialis, then between the Biceps and Brachialis, to these it gives branches, and is distributed to the Skin at the outer part of the Fore-arm and back of the Hand.

11 The Median is the largest Nerve from the Axillary Plexus, it accompanies the Brachial Artery; in the

Answ.

Fore-arm it passes deep-seated, between the Flexor Sublimis and Profundus, under the Ligamentum Annulare Carpi to the palm of the Hand, where it divides into branches, viz. *two* to the Thumb,—*two* to the Fore finger,—*two* to the Middle finger,—and *one* to the Ring finger, after communicating with a branch of the Cubital.

12 The Cubital descends along the inner part of the Arm, passes in a groove between the inner Condyle of the Humerus, and the Olecranon perforates the Flexor Carpi Ulnaris, descends over the Ligamentum Annulare Carpi to the palm of the Hand, where it sends off *one branch* to the Ring finger, two to the Little finger, and a branch of communication to the Median.

13 The Internal Cutaneus is the smallest of the Brachial Nerves, it passes superficially along the inside of the Arm, and is distributed to the Integuments at the inner and fore part of the Fore-arm.

14 The Radial runs backward round the Os Humeri, covered by the Triceps, to which it gives branches to the outside of the Elbow; at the bend of the Arm it descends between the Brachialis and Supinator Longus, to which and to the contiguous Extensors and Supinators it gives rami. It here divides into a Superficial and a Profound Branch. The *Superficial Branch* accompanies the Radial Artery, and at the lower part of the Radius it sends rami to the convex parts of the Thumb and three adjacent Fingers. The *Profound Branch* passes between the upper extremity of the Radius and Supinator Brevis, in its passage supplying the neighbouring muscles. It is then lost in the Extensor Communis and Muscles of the Carpus and Thumb, after having given a ramus to the Musculo-Cutaneus Nerve.

15 The Axillaris, or Articularis, runs in the Axilla, between the Teres Major and Minor, and behind the head of the Os Humeri, round the neck of which it turns, passing between the articulation and the upper end of the long head of the Triceps to the Deltoid, under which it passes and ramifies, supplying the adjacent muscles and the joint.

SECTION LXVI.

OF THE DORSAL NERVES.

Answ.

1 There are *Twelve Pairs* of Dorsal Nerves.

2 They arise from the Spinal Marrow in the same way as the Cervical, and like them pass out through the holes formed by the junction of the Vertebral Notches;

3 Each now presents a gangliform enlargement, from which a small posterior Branch and a large anterior Branch arise.

4 The *posterior Branches* are distributed to the Muscles and Integuments of the Back.

5 The *anterior Branches* send each two branches to the Thoracic Ganglia of the Great Sympathetic; they then follow the course and distribution of the Intercostal Arteries, and are called, the Intercostal Nerves.

6 The *First Dorsal Pair*, after communicating with the Great Sympathetic, and sending off its posterior and a small intercostal branch, concurs in the formation of the Axillary Plexus.

7 The *Second and Third Intercostals* send branches to form the Intercosto-Humeral Nerves, which pass into the Axilla, and are distributed to the Integuments on the inside of the upper Arm.

8 The *Five Inferior Intercostals* also supply the Muscles and Integuments of the Abdomen.

SECTION LXVII.

OF THE LUMBAR NERVES.

1 There are *Five Pairs* of Lumbar Nerves.

2 They arise, form each a Ganglion after leaving the Spine, and send off an anterior and a posterior branch in the same manner as has been described of the Cervical and Dorsal Nerves; they send branches backward to the Vertebral Muscles, and communicate with each other and with the Sympathetic; by their mutual communication they form the *Lumbar Plexus.*

FIRST PAIR.

Answ.

3 The First Pair is distributed in three branches; one to the abdominal Muscles, around the Crista of the Ilium; the other passes to the Pubis and Scrotum; and the third to the Groin, where it contributes to form the *Crural Nerve.*

SECOND PAIR.

4 The Second Pair contributes largely to the Lumbar Plexus, and concurs in the formation of the Crural and Obturator Nerves.

THIRD PAIR.

5 The Third Pair contributes to form the Crural and Obturator Nerves, and gives branches to the neighbouring Muscles.

FOURTH PAIR.

6 The Fourth Pair sends a branch which, joining one from the Third, and one from the Second Pair, forms the Obturator. At the same place it completes the formation of the Crural Nerve. Its remaining portion joins the Fifth Pair.

FIFTH PAIR.

7 The Fifth Pair of the Lumbar Nerves descends on the Sacro-iliac Symphysis, enters the Pelvis, and receiving a branch from the Fourth Lumbar, joins the Sacral Nerves to produce the Sciatic Plexus.

OBTURATOR NERVE.

8 The Obturator Nerve is formed by branches from the Second, Third and Fourth Pairs of Lumbar Nerves;

9 It passes from the Pelvis at the upper part of the Obturator Foramen, supplying in its course the Obturator Muscles and Pectineus. It then divides into three chief branches to the portions of the Triceps, and sends Rami between them to the Gracilis.

SECTION LXVIII.

OF THE SACRAL NERVES.

Answ.

1 There are generally *Six Pairs* of SACRAL NERVES.

2 Their *posterior small branches* pass out by the Posterior Sacral Foramina, the *anterior branches* of the four Superior pass through the Anterior Sacral Foramina, the two Inferior through the lateral Notches at the extremity of that Bone, and in the Os Coccygis.

3 The first pair is very large, the inferior ones gradually diminish, the last is very small.

4 The three superior, by their junction with the fourth and fifth Lumbar Pairs, form the *Sciatic Plexus*.

5 From the Plexus, but more especially from the second pair, a *branch* goes to the Vesiculæ Seminales, Prostate, Uterus, Fallopian Tubes: another chiefly from the fourth pair, has a similar distribution, and goes also to the Rectum and Bladder.—A *third branch*, the PUDIC, chiefly from the third runs on the inside of the Ischium to the Corpus Cavernosum, the Muscles, parts of Generation, and Sphincter Ani. From the extremity of the Plexus, *one branch*, the Glutæal, goes to the Glutæus Medius, and Minimus.

6 The FIFTH PAIR running forward between the extremity of the Sacrum and Ligament of the Os Coccygis, is distributed chiefly to the Muscles of the Anus, and neighbouring Integuments.—The LAST PAIR running in a direct line from the extremity of the Sacral Canal, is distributed to the Anus, Integuments, &c.

SECTION LXIX.

OF THE CRURAL AND SCIATIC NERVES.

CRURAL NERVE.

1 The CRURAL NERVE is formed by the union of the three or four Superior Lumbar Nerves;

2 It passes under Poupart's Ligament to the Groin.

3 It is situated anterior to the blood vessels.

4 In the Groin it divides into numerous branches, some *superficial*, which go to the Integuments; others

Answ.

profound, which are distributed to the neighbouring Muscles; *one branch*, larger and longer than the rest, accompanies the Saphena Vein to the Ankle, and in its course on the Thigh, accompanies the Femoral Artery.

SCIATIC NERVE.

5 The SCIATIC NERVE, the largest in the human body, is formed by the plexiform union of the last Lumbar, and first four Sacral Pairs;

6 It passes out of the Pelvis by the Great Ischiatic Notch, proceeds betwixt the Great Trochanter and Tuberosity of the Ischium, descends on the back part of the Thigh to the Ham, where it receives the name of POPLITEAL NERVE.

7 In this course it gives branches to the Muscles and Integuments.

8 The POPLITEAL NERVE is situated between the Hamstrings, and divides into an External, or *Fibular Nerve*, and an Internal, or *Tibial Nerve*, which gradually separate and pass behind the Condyles of the Os Femoris, and between the heads of the Gastrocnemii.

9 The TIBIAL NERVE descends behind the Popliteal Muscle, by the side of the Plantaris, between the Gastrocnemii; it then pierces the head of the Soleus, and runs between that Muscle and the great Flexors of the Toes, near to the inner Ankle.

10 In its course it sends *Rami* to the joint of the Knee, the Muscles and Integuments contiguous to its course. It sends also a *greater Branch* from its upper part, which gives one filament to the Tibialis Posticus, and another perforating the Interosseus Ligament to the upper part of the Tibialis Anticus Muscles; it then sends a *long Ramus* down the back of the leg, between the Integuments and Gastrocnemius, by the side of the Saphena Externa; the Trunk then passes behind the inner Ankle, through an Annular Ligament, to the sole of the Foot; when it divides into the *internal* and *external Plantar Nerves*, which accompany the Arteries of the same name.

Answ.

11 The **Internal Plantar** Nerve is the largest, it runs first along the inner side of the sole of the Foot, giving filaments to the Adductor Pollicis, Flexor Brevis Digitorum, and Massa Carnea Sylvii, it then divides into four branches, which are distributed to the Toes, after the manner of the Median Nerve in the Hand.

12 The **External Plantar** Nerve passes along the outer edge of the Foot, and divides into two branches, the first branch runs between the two last Toes, and divides to their sides; the second branch goes to the inferior external side of the little Toe;

13 The **Fibular Nerve** runs forward round the head of the Fibula, and divides into several Rami, which are distributed to the outer part of the Leg, and to the upper part of the Foot, where it is distributed to the Integuments.

SECTION LXX.

OF THE GREAT SYMPATHETIC NERVE.

1 The **Great Sympathetic**, or *Intercostal Nerve*, is placed on the anterior and lateral parts of the Spine, before the roots of the Transverse processes; extending from the Foramen Carotideum of the Temporal Bone, to the lower part of the Sacrum;

2 It is considered generally as beginning from a branch of the sixth pair given off in the Cavernous Sinus, and which is soon joined by another from the Vidian Nerve.

3 It has, at different distances, a great number of Gangliform Tubercles, from which Ramifications proceed forward, as well as Filaments backward to the Ganglia of the Nerves of the Medulla Spinalis.

4 The **Ganglia** of the Great Sympathetic are divided into *Cervical*, *Dorsal*, *Lumbar*, and *Sacral*.

5 There are three *Cervical Ganglia*, a *superior*, a *middle*, and an *inferior*.

6 The **Superior Cervical Ganglion** is large, soft, and of an oblong figure, situated longitudinally before the roots of the Transverse processes of the first three Vertebræ, and behind the Internal Carotid;

Answ.

7 It is closely connected with the eighth and ninth pairs, and receives other filaments from them, as well as from the four Superior Cervical Nerves; it sends branches to the Pharynx, others which surround the blood vessels, and a branch to the Heart, called, the *Superior*, or *Superficial Cardiac Nerve.*

8 In its course down the Neck to the last Cervical Vertebra, it communicates with the fifth and sixth Cervical and the Recurrent, and sends branches to the Cardiac Plexus.

9 The MIDDLE CERVICAL GANGLION is not constant; when present it gives and receives the branches noticed as belonging to its Trunk in the Neck.

10 The INFERIOR CERVICAL GANGLION is situated behind the Vertebral Artery, at the root of the Transverse process of the last Cervical Vertebra:

11 It receives branches from the three Inferior Cervical and first Dorsal pair, and from the Recurrent; and sends branches to the Cardiac and Pulmonary Plexuses.

12 The FIRST DORSAL GANGLION is placed immediately below the Inferior Cervical, and behind the Subclavian Artery.

13 These two Ganglia are connected to each other by a short portion of the Trunk, which is sometimes double and Plexiform, and by a branch which passes before the Subclavian Artery, thus forming an arch which incloses the Artery.

14 The CARDIAC NERVES consist of branches from the Trunk of the Great Sympathetic in the Neck, (or from the middle Cervical Ganglion when present,) and from the inferior Cervical Ganglion; and meeting those from the other side, they form the CARDIAC PLEXUS, whose branches supply the Heart and its Pericardium.

15 From the first Dorsal Ganglion, the Great Sympathetic descends over the Ligaments, joining the Heads of the Ribs to the Vertebræ; on the last false Rib it bends towards the bodies of the Vertebræ.

16 Between each Rib it forms a Ganglion.

17 These *Ganglia* regularly communicate with the Dorsal Nerves, by two filaments from each.

Answ.

18 Five, and sometimes more, considerable branches from several Ganglia below the fifth, pass forward and downward on the bodies of the Vertebræ: they unite and form one short Nerve on the last Dorsal Vertebra, called, the SPLANCHNIC.

19 The SPLANCHNIC NERVE perforates the upper and lateral part of the lower Muscle of the Diaphragm.

20 Having entered the Abdomen behind the Renal Capsule, it forms a large Ganglion, called, the *Semilunar.*

21 The SEMILUNAR GANGLION forms a communication between the Splanchnic Nerve of each side, before the Aorta; it then forms the *Solar Plexus*, from whence proceed numerous branches to the different Viscera, viz.

22 The CÆLIAC, or STOMACHIC PLEXUS, to the Stomach.

23 The HEPATIC PLEXUS, to the Liver, Duodenum, Pancreas.

24 The SPLENIC PLEXUS to the Spleen and Pancreas.

25 The RENAL, or EMULGENT PLEXUS, to the Kidneys.

26 The SUPERIOR MESENTERIC PLEXUS, to the small Intestines.

27 The INFERIOR MESENTERIC PLEXUS, to the large Intestines.

28 The HYPOGASTRIC PLEXUS, to the contents of the Pelvis.

29 The SPERMATIC PLEXUS to the Testicles.

30 The GREAT SYMPATHETIC, after forming the Splanchnic Nerve, perforates the inferior muscle of the Diaphragm, and then runs on the bodies of the Vertebræ, where it forms the *Lumbar Ganglia.*

31 Each *Lumbar Ganglion* receives two filaments from the corresponding Lumbar Nerve;

32 It passes into the Pelvis, communicating with the Sacral Nerves, where it forms the *Sacral Ganglia;*

33 It sends branches to the Inferior Mesenteric Plexus, and terminates by a communication with the Nerve of the opposite side, forming an inverted arch, where,

34 Together with the two lowest Sacral Nerves, it gives several Branches to the Rectum, Anus, and Coccygeal Muscles.

APPENDIX.

PECULIARITIES OF THE FEMALE.

Answ.

1 The **Bones of the Female** have some peculiarities, for which, see page 65.

2 The **Integuments** are softer than in the Male, and in the Face there is no Beard.

3 The leading anatomical peculiarities of the Female are the Organs of Generation, as described at page 156, and the *Mammæ*, or Breasts, subservient to them.

4 The **Mammæ** are two glandular bodies, of a hemispherical figure, situated at the anterior and superior part of the Thorax, on the Pectoralis Major, and covered by the Skin.

5 They are of various size in different subjects, but they acquire their chief bulk at the age of puberty.

6 Each Mamma consists of the *Papilla*, or Nipple; the *Areola*, and the *glandular Substance* of the Mamma.

7 The **Papilla**, or **Nipple**, projects from the anterior and middle part of the Breast; it is of a red colour, and capable of erection;

8 It consists of common Integuments, and of a firm elastic substance, in which are placed from fifteen to twenty ducts, called *Tubuli Lactiferi;* these are the excretory ducts of the Gland, and terminate on the surface of the Nipple by open mouths.

9 The **Areola** is a circular disk at the base of the Nipple, and of a similar red colour, it contains numerous sebacious follicles.

10 The **Glandular Substance of the Mamma** is imbeded in a quantity of fat, which forms the great bulk of the Breast, it consists of numerous separate, white, glandular portions, from which the Lactife-

Answ.

rous Tubes arise, and approach the Nipple, into which they run and terminate.

11 The Breasts secrete the milk for the purpose of nourishing the offspring; they are therefore hardly developed before the age of puberty, and shrink in old age.

PECULIARITIES OF THE FŒTUS.

1 The **Bones of the Fœtus** are imperfectly formed; many of them consist of cartilage, whilst others are much more advanced; of this last kind are the *Ossicula Auditus*, the *Clavicles*, the *Ribs*, and the *Vertebræ*. Vide Osteogeny, page 9.

2 The **Adipose Substance** is not found about the internal parts as in the adult, but is chiefly placed under the Skin.

3 The **Brain** and **Nerves** bear a larger proportion to the rest of the body.

4 In **the Eye** a remarkable membrane blocks up the pupil, being attached to the loose edge of the Iris, called Membrana Pupillaris; it disappears some time before birth.

5 The **Thymus Gland** is very large, and gradually disappears after birth.—The **Liver** is much larger, and so are the **Renal Glands**; and the **Kidneys** are of a more lobulated form.

6 The **Testicles**, in the early months, are situated in the Cavity of the Abdomen, a little below the Kidneys; they gradually descend towards the abdominal Ring, and pass into the Scrotum.

7 The parts peculiar to the Fœtal Circulation are the *Foramen Ovale*, of the Heart, the *Canalis Arteriosus*, the *Canalis Venosus*, the *Funis* or *Umbilical Chord*, the *Umbilical Vein*, and two *Umbilical Arteries*.

8 The **Foramen Ovale** is an oval opening in the Septum Auricularum, by which the blood passes from the right to the left Auricle; a Valve prevents its return in the contrary direction. In the adult this

Answ.

Foramen is almost completely obliterated, although its situation may always be perceived.

9 The DUCTUS ARTERIOSUS connects the Pulmonary Artery to the ascending Aorta, and transmits the Blood, which cannot pass through the Lungs, from the right Ventricle into the Aorta.

10 The DUCTUS VENOSUS is little more than half an inch in length, and passes from the termination of the Umbilical vein in the Liver to the inferior Vena Cava.

11 The UMBILICAL Vein passes from the Umbilicus to the Liver.

12 The UMBILICAL ARTERIES arise from the internal Iliac Arteries, and pass up the sides of the Bladder to the Umbilicus.

13 The UMBILICAL CHORD consists of three vessels, viz. the UMBILICAL VEIN, and the TWO UMBILICAL ARTERIES, which on quitting the Abdomen of the Fœtus at the Navel, unite and form this long Chord of communication with the Mother.

14 The Fœtal Circulation is thus performed: the Blood is conveyed to the Fœtus through the Umbilical Vein, from which the greater part passes through the Liver, and the rest, by the Ductus Venosus, into the Vena Cava, and thus to the right Auricle. From this Auricle it partly passes into the right Ventricle, but partly also through the Foramen Ovale into the left Auricle. The portion which passes into the right Ventricle is transmitted, through the Pulmonary Artery, to the Lungs, in part, but chiefly through the Canalis Arteriosus into the Aorta. The Blood, which the Pulmonary Veins bring into the left Auricle, passes, with that received through the Foramen Ovale, into the left Ventricle, whence it is transmitted, through the Aorta, to the whole system, and returned by the Veins. To the Mother the Blood is returned by the Umbilical Arteries.

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THE END.

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- 248 BONES of the BODY, *consisting of*
  - 63 Bones of the HEAD, *consisting*
    - 8 Large and 8 Small Bones of the CRANIUM, *consisting of*
      - 1 Os Frontis,
      - 2 Ossa Parietalia,
      - 1 Os Occipitis,
      - 2 Ossa Temporum, *containing* …
        - 2 Mallei,
        - 2 Inci,
        - 2 Ossa Orbicularia,
        - 2 Stapides.
      - 1 Os Ethmoides,
      - 1 Os Sphœnoides,
    - 46 Bones of the FACE, *consisting of*
      - 2 Ossa Maxillaria Superiora,
      - 2 Ossa Nasalia,
      - 2 Ossa Lachrymalia,
      - 2 Ossa Malarum,
      - 2 Ossa Palatina,
      - 2 Ossa Turbinata Inferiora,
      - 1 Os Vomer,
      - 1 Os Maxillare Inferius,
      - 32 Dentes, or Teeth, *consisting of*
        - 8 Incisores,
        - 4 Cuspidati,
        - 8 Bicuspides,
        - 8 Molares,
        - 4 Dentes Sapientiæ.
    - 1 Bone of the TONGUE,
      - 1 Os Hyoides.
  - 53 Bones of the TRUNK, *consisting of*
    - 26 Bones of the SPINE, *consisting of*
      - 24 Vertebræ, *consisting of* ……
        - 7 Cervical,
        - 12 Dorsal,
        - 5 Lumbar.
      - 1 Os Sacrum,
      - 1 Os Coccygis.
    - 25 Bones of the THORAX, *consisting of*
      - 1 Sternum,
      - 24 Costæ, or Ribs, *consisting of* … *on each side.*
        - 7 True,
        - 5 False,
    - 2 Bones of the PELVIS,
      - 2 Ossa Innominata, *consisting of* . *on each side.*
        - 1 Os Ilium.
        - 1 Os Ischium,
        - 1 Os Pubis,
  - 64 Bones of the UPPER EXTREMITIES, *consisting of*
    - 4 Bones of the SHOULDERS, *consisting of*
      - 2 Claviculæ,
      - 2 Scapulæ.
    - 2 Bones of the ARMS,
      - 2 Ossa Humeri.
    - 4 Bones of the FORE ARMS, *consisting of*
      - 2 Ulnæ,
      - 2 Radii.
    - 54 Bones of the HANDS, *consisting of*
      - 16 Bones of the CARPI, *consisting of*
        - 2 Ossa Navicularia, or Scaphoidea,
        - 2 Ossa Lunaria,
        - 2 Ossa Cuneiformia,
        - 2 Ossa Pisiformia,
        - 2 Ossa Trapezia,
        - 2 Ossa Trapezoidea,
        - 2 Ossa Magna,
        - 2 Ossa Unciformia.
      - 10 Bones of the METACARPI,
      - 28 Bones of the PHALANGES.
  - 60 Bones of the LOWER EXTREMITIES, *consisting of*
    - 2 Bones of the THIGHS,
      - 2 Ossa Femorum.
    - 6 Bones of the LEGS, *consisting of*
      - 2 Patellæ,
      - 2 Tibiæ,
      - 2 Fibulæ.
    - 52 Bones of the FEET, *consisting of* .
      - 14 Bones of the TARSI, *consisting of*
        - 2 Ossa Calcum,
        - 2 Astragali,
        - 2 Ossa Cuboidea,
        - 2 Ossa Navicularia,
        - 6 Ossa Cuneiformia, *consisting of*
          - 2 Internal,
          - 2 Middle,
          - 2 External.
      - 10 Bones of the METATARSI,
      - 28 Bones of the PHALANGES.
  - 8 SESAMOID BONES, of which 2 belong to each Great Toe, and 2 to each Thumb.

TABLE OF THE MUSCLES.

Table II.

MUSCLES.	Muscles of the Trunk,	Muscles arising from the Trunk, and inserted into it, and the Linea Alba,	Obliquus Externus Abdominis, Obliquus Internus Abdominis, Transversalis Abdominis, Rectus Abdominis, Pyramidalis Abdominis.
		Muscles arising from the Ribs and Vertebræ, and terminating in a Central Tendon,	Greater Muscle of the Diaphragm, Lesser Muscle of the Diaphragm.
		Muscle arising from the Pelvis and Vertebræ, and inserted into the Ribs and Vertebræ,	Longissimus Dorsi.
		Muscle arising from the Pelvis and Vertebræ, and inserted into the Ribs,	Sacro-Lumbalis.
		Muscle arising from the Pelvis and Vertebræ, and inserted into the Vertebræ,	Multifidus Spinæ.
		Muscle arising from the Pelvis, and inserted into the Ribs,	Quadratus Lumborum.
		Muscles arising from the Vertebræ, and inserted into the Ribs,	Scalenus Anticus, Scalenus Medius, Scalenus Posticus, Cervicalis Descendens, Serratus Superior Posticus, Serratus Inferior Posticus.
		Muscles arising from the Vertebræ, and inserted into them,	Longus Colli, Splenius Cervicis, Obliquus Capitis Inferior, Transversalis Colli, Semi-Spinalis Colli, Spinalis Dorsi, Semi-Spinalis Dorsi, Interspinales Colli, Interspinales Dorsi et Lumborum, Intertransversales Colli et Lumborum, Intertransversales Dorsi.
		Muscles arising from one Rib, and inserted into another,	Intercostales Externi, Intercostales Interni.
		Muscle from the Sternum to the Ribs,	Sterno-Costalis,
		Muscle arising from the Vertebræ, and inserted into the Pelvis,	Psoas Parvus.
		Muscles arising from one part of the Pelvis, and inserted into another,	Coccygeus, Curvator Coccygis.
	Muscles of the Male Organs of Generation and Anus,	Muscle arising from the Obliquus Internus Abdominis, and inserted into the Testis,	Cremaster.
		Muscles arising from the Tuber Ischii, and inserted about the Penis,	Erector Penis, Transversus Perinei, Transversus Perinei Alter.
		Muscle arising from one part of the Penis, and inserted into another,	Accelerator Urinæ, or Ejaculator Seminis.
		Muscle arising from the Pubis, and inserted about the Prostate Gland,	Compressor Prostatæ.
		Muscles arising from the Pelvis, and inserted about the Anus,	Levator Ani, Sphincter Ani Externus, Sphincter Ani Internus.
	Muscles of the Female Organs of Generation and Anus,	Muscle arising from the Ischium, and inserted into the Clitoris,	Erector Clitoridis.
		Muscle arising from the Clitoris, and inserted into the Vagina,	Sphincter Vaginæ.
		Muscle arising from the Tuber Ischii, and inserted into the Perineum,	Transversus Perinei.
		Muscle arising from the Tuber Ischii, and inserted into the Vagina,	Transversus Perinei Alter.
		Muscle arising from one part of the Clitoris, and inserted into another,	Depressor Urethræ Muliebris.
		Muscle arising from the Pelvis, and inserted about the Anus,	Levator Ani, Sphincter Ani Externus, Sphincter Ani Internus.
	Muscles of the Head, Face, &c.	Muscle arising from the Integuments of the Breast and Shoulder, and inserted into those of the Face,	Platysma Myoides.
		Muscles arising from the Sternum, Ribs, or Vertebræ, and inserted into the Head,	Sterno-Cleido-Mastoideus, Rectus Capitis Anticus Major, Rectus Capitis Anticus Minor, Rectus Capitis Lateralis, Splenius Capitis, Complexus, Trachelo-Mastoideus, Rectus Capitis Posticus Major, Obliquus Capitis Superior, Rectus Capitis Posticus Minor.
		Muscles arising from the Skull, and inserted into its Integuments,	Occipito-Frontalis, Corrugator Supercilii.
		Muscles arising from the Cranium, and inserted into the Eyelids,	Levator Palpebræ Superioris, Orbicularis Palpebrarum.
		Muscles arising from the Cranium, and inserted into the Eyeball,	Levator Oculi, Depressor Oculi, Adductor Oculi, Abductor Oculi, Trochlearis, or Obliquus Superior, Obliquus Inferior Oculi.
		Muscles arising from the Cranium, and inserted into the External Ear,	Attollens Aurem, Anterior Auris, Retrahens Aurem.
		Muscles arising from one part of the Pinna of the External Ear, and inserted into another,	Hellicis Major, Hellicis Minor, Tragicus, Anti-Tragicus, Transversus Auris.
		Muscles arising from the Cranium, and inserted into the Ossicula Auditus,	Laxator Tympani Major, Laxator Tympani Minor, Tensor Tympani, Stapedius.
		Muscle arising from one part of the Nasal Cartilage, and inserted into another,	Compressor Naris.
		Muscles arising from the Cranium, and inserted into the Nose and Lips,	Levator Labii Superioris Alæque Nasi, Depressor Labii Superioris Alæque Nasi.
		Muscle arising from the Nose, and inserted into the upper Lip,	Nasalis Labii Superioris.
		Muscles arising from the Cranium, and inserted into the Lips,	Depressor Labii Inferioris, Levator Labii Inferioris, Depressor Anguli Oris, Buccinator, Zygomaticus Major, Zygomaticus Minor.
		Muscle arising from one part of the Lips, and inserted into another,	Orbicularis Oris.
		Muscle arising from one part of the upper Jaw, and inserted into another,	Anomalus Maxillæ Superioris.
		Muscles arising from the Cranium, and inserted into the lower Jaw,	Temporalis, Masseter, Pterygoideus Externus, Pterygoideus Internus, Digastricus.
	Muscles of the Organs of Voice and Deglutition,	Muscles arising from the Cranium, and inserted into the Larynx,	Stylo-Hyoideus, Mylo-Hyoideus, Genio-Hyoideus.
		Muscles arising from the Trunk, and inserted into the Larynx,	Sterno-Hyoideus, Sterno-Thyroideus.
		Muscle arising from the Shoulder, and inserted into the Larynx,	Omo-Hyoideus.
		Muscles arising from one part of the Larynx, and inserted into another,	Thyreo-Hyoideus, Musculus Glandulæ Thyroideæ, Crico-Thyroideus, Crico-Arytænoideus Posticus, Crico-Arytænoideus Lateralis, Thyreo-Arytænoideus Major, Thyreo-Arytænoideus Minor, Arytænoideus Obliquus, Arytænoideus Transversus.
		Muscles arising from the Cranium, and inserted into the Tongue,	Genio-Glossus, Stylo-Glossus.
		Muscle arising from the Larynx, and inserted into the Tongue,	Hyo-Glossus.
		Muscle arising from the Tongue, and inserted into itself,	Lingualis.
		Muscles arising from the Cranium, and inserted into the Palate,	Circumflexus, or Tensor Palati, Levator Palati.
	Muscles of the Organs of Voice and Deglutition,	Muscles arising from the Larynx, and inserted into the Epiglottis,	Thyreo-Epiglottideus Major, Thyreo-Epiglottideus Minor. Arytæno-Epiglottideus.
		Muscle arising from the Cranium, and inserted into the Uvula,	Azygos Uvulæ.
		Muscle arising from the Tongue, and inserted into the Fauces,	Constrictor Isthmi Faucium.
		Muscles arising from the Cranium, and inserted into the Pharynx,	Stylo-Pharyngeus, Constrictor Pharyngis Superior.
		Muscles arising from the Larynx, and inserted into the Pharynx,	Constrictor Pharyngis Medius, Constrictor Pharyngis Inferior.
		Muscle arising from the Palate, and inserted into the Pharynx,	Palato-Pharyngeus.
	Muscles of the Upper Extremity,	Muscles arising from the Trunk, and inserted into the Shoulder,	Pectoralis Minor, Angularis Scapulæ, Trapezius. Rhomboideus, Serratus Magnus, Subclavius.
		Muscles arising from the Trunk, and inserted into the Humerus,	Pectoralis Major, Latissimus Dorsi.
		Muscles arising from the Shoulder, and inserted into the Humerus,	Deltoides, Coraco-Brachialis, Supra-Spinatus, Infra-Spinatus, Teres Minor, Teres Major, Subscapularis.
		Muscles arising from the Shoulder, and inserted into the Fore Arm,	Biceps Cubiti, Long Head of Triceps.
		Muscles arising from the Humerus, and inserted into the Fore Arm,	Shorter Heads of Triceps, Anconeus, Brachialis Internus, Supinator Radii Longus, Supinator Radii Brevis, Pronator Radii Teres.
		Muscles arising from the Humerus, and inserted into the Hand,	Flexor Carpi Ulnaris, Palmaris Longus, Flexor Carpi Radialis, Extensor Carpi Radialis Longior, Extensor Carpi Radialis Brevior, Extensor Carpi Ulnaris.
		Muscles arising from the Humerus, and inserted into the Fingers,	Flexor Digitorum Sublimis Perforatus, Flexor Longus Pollicis, Extensor Digitorum Communis.
		Muscle arising from the Ulna and Interosseous Ligament, and inserted into the Phalanges of the Fingers,	Flexor Digitorum Profundus Perforans.
		Muscles arising from the Tendons of the Flexor Profundus, and inserted into the Phalanges of the Fingers,	Lumbricales.
		Muscles arising from the Fore Arm, and inserted into the Fingers,	Extensor Ossis Metacarpi Pollicis, Extensor Primi Internodii Pollicis, Extensor Secundi Internodii Pollicis, Flexor Longus Pollicis, Indicator.
		Muscle arising from the Ulna, and inserted into the Radius,	Pronator Quadratus.
		Muscle arising from the Wrist, and inserted into the Integuments of the Hand,	Palmaris Brevis.
		Muscles arising from the Wrist, and inserted into the Thumb,	Abductor Pollicis, Flexor Ossis Metacarpi Pollicis, Flexor Brevis Pollicis.
		Muscle arising from the Wrist, and inserted into the fore Finger,	Abductor Indicis.
		Muscles arising from the Wrist, and inserted into the little Finger,	Abductor Minimi Digiti Manus, Adductor Metacarpi Minimi Digiti, Flexor Parvus Minimi Digiti.
		Muscle arising from the Metacarpus, and inserted into the Thumb,	Adductor Pollicis.
		Muscles arising from the Metacarpus, and inserted into the Fingers,	Prior Indicis, Posterior Indicis, Prior Medii, Posterior Medii, Prior Annularis, Posterior Annularis, Interosseous Auricularis.
	Muscles of the Lower Extremity,	Muscle arising from the Trunk, and inserted into the Femur,	Psoas Magnus.
		Muscles arising from the Pelvis, and inserted into the Femur,	Gluteus Maximus, Gluteus Medius, Gluteus Minimus, Pyriformis, Obturator Internus, Gemini, Quadratus Femoris, Iliacus Internus, Pectinalis, Obturator Externus, Adductor Longus Femoris, Adductor Brevis Femoris, Adductor Magnus Femoris.
		Muscle arising from the Pelvis, and inserted into the Pascia of the Thigh,	Tensor Vaginæ Femoris.
		Muscles arising from the Pelvis, and inserted into the Leg,	Rectus Cruris, Sartorius, Gracilis, Semi-Tendinosus, Semi-Membranosus, Long Head of Biceps.
		Muscles arising from the Femur, and inserted into the Leg,	Cruralis, Vastus Externus, Vastus Internus, Short Head of Biceps, Popliteus.
		Muscles arising from the Femur, and inserted into the Foot,	Gastrocnemius, Plantaris.
		Muscles arising from the Leg, and inserted into the Foot,	Soleus, Tibialis Posticus, Peroneus Longus, Peroneus Brevis, Tibialis Anticus, Peroneus Tertius, or Nonus Vesalii.
		Muscles arising from the Leg, and inserted into the Toes;	Extensor Longus Digitorum Pedis, Extensor Proprius Pollicis Pedis, Flexor Longus Digitorum Pedis Profundus Perforans, Flexor Longus Pollicis Pedis.
		Muscles arising from the Tarsus and Metatarsus, and inserted into the Toes in general,	Extensor Brevis Digitorum Pedis, Flexor Brevis Digitorum Pedis, Flexor Digitorum Accessorius, or Massa Carnea Jacobi Sylvii.
		Muscles arising from the Tendons of the Flexor Longus, and inserted into the Toes,	Lumbricales Pedis.
		Muscles arising from the Tarsus and Metatarsus, and inserted into the Toes,	Adductor Pollicis Pedis, Flexor Brevis Pollicis, Abductor Pollicis Pedis, Adductor Minimi Digiti Pedis, Flexor Brevis Minimi Digiti Pedis, Abductor Minimi Digiti Pedis, Adductor Indicis Pedis, Abductor Indicis Pedis, Adductor Medii Digiti Pedis, Abductor Medii Digiti Pedis, Adductor Tertii Digiti Pedis, Abductor Tertii Digiti Pedis.
		Muscle arising from one Bone of the Metatarsus, and inserted into another,	Transversalis Pedis.

TABLE OF THE ARTERIES.

Table III.

- ARTERIES,
  - Aorta,
    - Branches from the Arch of the Aorta,
      - Right Coronary.
      - Left Coronary.
      - Arteria Innominata.*
      - Left Common Carotid,
        - External Carotid,
          - Superior Thyroideal, .
            - Ascending Branch.
            - Descending Branch.
            - Laryngeal Branch.
          - Lingual, ...
            - Hyoidal Branch.
            - Dorsal of the Tongue.
            - Sublingual.
            - Raninal.
          - External Maxillary, . .
            - Submental.
            - Coronaria Labiorum.
            - External Nasal.
            - Angular.
          - Ascending Pharyngeal.
          - Occipital, ...
            - Artery to the Dura Mater.
            - Auricular Branch.
            - Cervical Branch.
          - Posterior Auris, ...
            - Parotid Branches.
            - Tympanic Branch.
            - Stylo-Mastoid Branch.
          - Temporal, ...
            - Frontal Branch.
            - Occipital Branch.
            - Transverse Fascial Branch.
            - Parietal Branch.
            - Anterior Auricular.
          - Internal Maxillary, . .
            - Middle Meningeal Artery.
            - Inferior Maxillary.
            - 2 Deep Temporal.
            - Alveolar.
            - Infra Orbitar.
            - Palato-Maxillary.
            - Nasal Artery, or Sphœno-Palatine.
        - Internal Carotid,
          - Ophthalmic, ...
            - Ciliary Arteries.
            - Supra Orbital.
            - Central Artery of the Retina.
          - Communicans.
          - Anterior Cerebri.
          - Media Cerebri.
      - Left Subclavian,
        - Vertebral.
        - Internal Mammary.
        - Cervical.
        - Superior Intercostal.
        - Inferior Thyroid.
        - Supra Scapular.
        - Axillary, . . .
          - Superior Thoracic,
          - Inferior Long Thoracic,
          - Humeral Thoracic,
          - Infra Scapular,
          - Posterior Circumflex,
          - Anterior Circumflex,
          - Brachial, .
            - Profunda Humeri Superior,
            - Profunda Inferior,
            - Anastomodicus Magnus,
            - Ulnar,
              - Anterior Interosseal.
              - Ulnar Recurrent.
              - Posterior Interosseal.
              - Dorsal Artery of the Wrist.
              - Superficial Palmar Arch.
              - Ulnaris Profunda.
              - First Digital.
              - Second Digital.
              - Third Digital.
              - Fourth Digital.
              - Communicans.
            - Radial,
              - Radial Recurrent.
              - Superficialis Volæ.
              - Arcus Profundus.
              - Great Artery of the Thumb.
              - Intermetacarpal Branches.
    - Descending Aorta,
      - Thoracic Aorta,
        - Right Bronchial.
        - Left Bronchial.
        - Inferior Bronchial.
        - Œsophageal.
        - Inferior Intercostals.
      - Abdominal Aorta,
        - Right Phrenic.
        - Left Phrenic.
        - Cœliac,
          - Coronary of the Stomach.
          - Hepatic, ...
            - Pyloric.
            - Gastro-Epiploica Dextra.
            - Duodenal.
            - Cystic.
          - Splenic,
            - Pancreatic.
            - Gastro-Epiploica Sinistra.
            - Vasa Brevia.
        - Superior Mesenteric,
          - Right Colic.
          - Ileo-Colica.
        - Right Capsular.
        - Left Capsular.
        - Right Emulgent.
        - Left Emulgent.
        - Right Spermatic.
        - Left Spermatic,
        - Inferior Mesenteric,
          - Left Colic.
          - Internal Hemorrhoidal.
        - Right Lumbar.
        - Left Lumbar.
    - Branches from the Termination of the Aorta,
      - Right Common Iliac,
      - Left Common Iliac,
      - each giving off an
        - Internal Iliac,
          - Lesser Iliac.
          - Sacro-Lateral.
          - Umbilical.
          - Inferior Vesical.
          - Middle Hemorrhoidal.
          - Uterine.
          - Umbilical.
          - Obturator.
          - Gluteal.
          - Sciatic.
          - Pudic.
        - and
        - External Iliac,
          - Epigastric,
          - Circumflex Iliac.
          - Femoral,
            - Superior External Pudic,
            - Middle External Pudic,
            - Inferior External Pudic,
            - Profunda Femoris,
              - External Circumflex.
              - Internal Circumflex.
              - First Perforant.
              - Second Perforant.
            - Femoral continued,
              - Large Anastomotic,
              - Superior Perforant,
              - Inferior Perforant,
              - Popliteal,
                - Superior External Articular,
                - Superior Internal Articular,
                - Middle Articular,
                - Inferior External Articular,
                - Inferior Internal Articular,
                - Anterior Tibial,
                  - Tibial Recurrent.
                  - Internal Malleolar.
                  - External Malleolar.
                  - Tarsal.
                  - Metatarsal.
                  - External Dorsal of the Great Toe.
                  - Deep Anastomotic.
                - Posterior Tibial,
                  - Posterior Interosseal.
                  - Common Fibular.
                  - External Plantar.
                  - Internal Plantar.
                  - Digital Arteries.
  - Pulmonary Artery,
    - Right Pulmonary Artery.
    - Left Pulmonary Artery.

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* This Artery divides into the Right Subclavian, and Right Common Carotid, whose distribution exactly resembles that of the Left Common Carotid, and Left Subclavian, which being given off separately, are described below.

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